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(FILE 'HOME' ENTERED AT 13:42:04 ON 23 MAR 2006)

FILE 'HCAPLUS' ENTERED AT 13:42:37 ON 23 MAR 2006

E US20040009399/PN

L1 1 SEA ABB=ON PLU=ON US20040009399/PN
D ALL
SEL RN

FILE 'REGISTRY' ENTERED AT 13:43:57 ON 23 MAR 2006

L2 25 SEA ABB=ON PLU=ON (110-71-4/BI OR 111-96-6/BI OR
116-15-4/BI OR 126-33-0/BI OR 156395-51-6/BI OR
24981-14-4/BI OR 25038-71-5/BI OR 25322-68-3/BI OR
33454-82-9/BI OR 646-06-0/BI OR 7704-34-9/BI OR
9002-89-5/BI OR 9002-98-6/BI OR 9003-01-4/BI OR
9003-05-8/BI OR 9003-18-3/BI OR 9003-39-8/BI OR
9003-55-8/BI OR 9003-56-9/BI OR 9004-32-4/BI OR
9004-34-6/BI OR 9004-62-0/BI OR 9004-65-3/BI OR
9004-67-5/BI OR 9011-17-0/BI)
D SCAN
D 1-25 CRN STR
D 2,3,5,10,14,16-25 RN STR

FILE 'HCAPLUS' ENTERED AT 14:35:56 ON 23 MAR 2006

L3 556 SEA ABB=ON PLU=ON ((LITHIUM OR LI) (A) (SULFUR OR
SULPHUR OR S)) (3A) BATTER?
D SCAN L1
L4 41103 SEA ABB=ON PLU=ON BUTADIENE (2A) (COPOLYM? OR CO(W) POLY
M?)
L5 3 SEA ABB=ON PLU=ON L3 AND L4
D SCAN
L6 1 SEA ABB=ON PLU=ON L1 AND L5
D SCAN

FILE 'REGISTRY' ENTERED AT 14:41:19 ON 23 MAR 2006

L7 10076 SEA ABB=ON PLU=ON 106-99-0/CRN
E 107-13-1/CRN
L8 18723 SEA ABB=ON PLU=ON 107-13-1/CRN
E 100-42-5/CRN
L9 72307 SEA ABB=ON PLU=ON 100-42-5/CRN
L10 1650 SEA ABB=ON PLU=ON L7 AND L8 AND L9
L11 2922 SEA ABB=ON PLU=ON L7 AND L8
L12 5168 SEA ABB=ON PLU=ON L7 AND L9

FILE 'HCAPLUS' ENTERED AT 14:53:01 ON 23 MAR 2006
D SCAN L1

FILE 'REGISTRY' ENTERED AT 14:53:01 ON 23 MAR 2006

L13 1 SEA ABB=ON PLU=ON 7704-34-9/RN
D SCAN
D CN
L14 236 SEA ABB=ON PLU=ON S/ELS(L)1/ELC.SUB

FILE 'REGISTRY' ENTERED AT 15:06:15 ON 23 MAR 2006

L15 14 SEA ABB=ON PLU=ON L14 AND S8

FILE 'HCAPLUS' ENTERED AT 15:06:30 ON 23 MAR 2006

L16 161564 SEA ABB=ON PLU=ON L14
L17 923 SEA ABB=ON PLU=ON L15

FILE 'REGISTRY' ENTERED AT 15:10:39 ON 23 MAR 2006

L18 1 SEA ABB=ON PLU=ON 7439-93-2/RN
D SCAN

FILE 'HCAPLUS' ENTERED AT 15:11:31 ON 23 MAR 2006

FILE 'HCAPLUS' ENTERED AT 15:11:36 ON 23 MAR 2006

FILE 'REGISTRY' ENTERED AT 15:12:07 ON 23 MAR 2006
D SCAN L13

FILE 'HCAPLUS' ENTERED AT 15:12:08 ON 23 MAR 2006

L19 80389 SEA ABB=ON PLU=ON L18
L20 135539 SEA ABB=ON PLU=ON L13
L21 556 SEA ABB=ON PLU=ON ((L19 OR LITHIUM OR LI) (A) (L20 OR
L16 OR L17 OR SULFUR OR SULPHUR OR S)) (3A) BATTER?
L22 41 SEA ABB=ON PLU=ON L21 AND BINDER?
L23 270 SEA ABB=ON PLU=ON L21 AND (CATHOD? OR POSITIV? (A) ELEC
TROD?)
L24 3464 SEA ABB=ON PLU=ON CONDUCT? (2A) AGENT?
L25 5 SEA ABB=ON PLU=ON L23 AND L24
D SCAN
L26 160095 SEA ABB=ON PLU=ON (ORGANIC? OR NONPOLAR? OR NON(W) POL
AR?) (2A) SOLVENT?
L27 1 SEA ABB=ON PLU=ON L26 AND L25
D SCAN
L28 2596 SEA ABB=ON PLU=ON (CATHOD? OR POSITIV? (A) ELECTROD?) (3
A) (L20 OR L16 OR L17 OR SULFUR OR SULPHUR OR S)
L29 10 SEA ABB=ON PLU=ON L28 AND L24
L30 1 SEA ABB=ON PLU=ON L29 AND L26
D SCAN
D QUE STAT
D QUE STAT L21
L31 138401 SEA ABB=ON PLU=ON L7
L32 142919 SEA ABB=ON PLU=ON L4 OR L31
L33 16 SEA ABB=ON PLU=ON L32 AND L21
L34 13 SEA ABB=ON PLU=ON L32 AND L23
L35 19 SEA ABB=ON PLU=ON L32 AND L28
L36 2 SEA ABB=ON PLU=ON L35 AND (L24 OR L26)
D SCAN
L37 25985 SEA ABB=ON PLU=ON L10
L38 27678 SEA ABB=ON PLU=ON L37 OR (ACRYLONITRILE (3A) BUTADIENE (3A) STYRENE)
L39 5 SEA ABB=ON PLU=ON L21 AND L38
L40 5 SEA ABB=ON PLU=ON L23 AND L38
L41 5 SEA ABB=ON PLU=ON L28 AND L38
L42 6 SEA ABB=ON PLU=ON (L39 OR L40 OR L41)
L43 1 SEA ABB=ON PLU=ON L42 AND L24
L44 50636 SEA ABB=ON PLU=ON L11
L45 52964 SEA ABB=ON PLU=ON L44 OR (ACRYLONITRILE (A) BUTADIENE)

L46 6 SEA ABB=ON PLU=ON L45 AND L21
L47 6 SEA ABB=ON PLU=ON L45 AND L23
L48 8 SEA ABB=ON PLU=ON L45 AND L28
L49 87240 SEA ABB=ON PLU=ON L12
L50 93938 SEA ABB=ON PLU=ON L49 OR (STYRENE (A) BUTADIENE)
L51 15 SEA ABB=ON PLU=ON L50 AND L21
L52 12 SEA ABB=ON PLU=ON L50 AND L23
L53 15 SEA ABB=ON PLU=ON L50 AND L28
L54 23 SEA ABB=ON PLU=ON (L33 OR L34 OR L35 OR L36) OR (L39
OR L40 OR L41 OR L42 OR L43) OR (L46 OR L47 OR L48) OR
(L51 OR L52 OR L53)

FILE 'REGISTRY' ENTERED AT 15:47:34 ON 23 MAR 2006
E POLYFLUOR/PCT
E FLUOROPOLY/PCT
E FLUOROPOLYMER?/PCT

L55 10568 SEA ABB=ON PLU=ON FLUOROPOLYMER?/PCT

FILE 'HCAPLUS' ENTERED AT 15:49:16 ON 23 MAR 2006

L56 81458 SEA ABB=ON PLU=ON L55
 L57 14 SEA ABB=ON PLU=ON L56 AND L54
 D QUE L21
 D QUE L5
 D QUE L3
 D QUE L23
 L58 2999 SEA ABB=ON PLU=ON L3 OR L21 OR L23 OR L28
 L59 119622 SEA ABB=ON PLU=ON L4 OR L38 OR L45 OR L50
 L60 20 SEA ABB=ON PLU=ON L58 AND L59
 L61 114716 SEA ABB=ON PLU=ON L56 OR FLUOROPOLYM?
 L62 14 SEA ABB=ON PLU=ON L60 AND L61
 D SCAN TI
 L63 2 SEA ABB=ON PLU=ON L62 AND (L24 OR L26)
 D SCAN

 FILE 'LREGISTRY' ENTERED AT 16:02:16 ON 23 MAR 2006
 L64 STR

 FILE 'REGISTRY' ENTERED AT 16:06:02 ON 23 MAR 2006
 L65 1960 SEA ABB=ON PLU=ON 116-15-4/CRN
 L66 2316 SEA ABB=ON PLU=ON 75-38-7/CRN
 L67 647 SEA ABB=ON PLU=ON L65 AND L66

 FILE 'HCAPLUS' ENTERED AT 16:10:48 ON 23 MAR 2006
 L68 5480 SEA ABB=ON PLU=ON L67
 L69 11864 SEA ABB=ON PLU=ON L65
 L70 24206 SEA ABB=ON PLU=ON L66
 L71 6405 SEA ABB=ON PLU=ON L65 AND L66
 L72 6405 SEA ABB=ON PLU=ON L68 OR L71
 D QUE L60
 L73 9 SEA ABB=ON PLU=ON L60 AND L72
 L74 2 SEA ABB=ON PLU=ON L73 AND (L24 OR L26)
 D QUE L54
 D QUE L60
 L75 32 SEA ABB=ON PLU=ON L5 OR L25 OR L27 OR L29 OR L30 OR
 L54 OR L57 OR L60 OR L62 OR L63 OR L73 OR L74
 L76 374637 SEA ABB=ON PLU=ON VISCOS?
 L77 3 SEA ABB=ON PLU=ON L75 AND L76
 D SCAN
 D 1-3 KWIC
 L78 5968 SEA ABB=ON PLU=ON L76 (5A) CONTROL?
 L79 2 SEA ABB=ON PLU=ON L75 AND L78
 L80 32 SEA ABB=ON PLU=ON L75 OR L77 OR L79
 L81 QUE ABB=ON PLU=ON MICRON? OR MICROMET? OR (MU OR
 MICRO) (A) (METER OR METRE OR M)
 L82 3 SEA ABB=ON PLU=ON L80 AND L81
 L83 1 SEA ABB=ON PLU=ON L80 AND EMULS?
 D KWIC
 L84 4 SEA ABB=ON PLU=ON L82 OR L83
 D 1-4 KWIC
 L85 32 SEA ABB=ON PLU=ON L80 OR (L82 OR L83 OR L84)
 D SCAN L1

 FILE 'REGISTRY' ENTERED AT 17:00:13 ON 23 MAR 2006
 L86 79 SEA ABB=ON PLU=ON 660-78-6/CRN
 E C2CLF3/MF
 L87 8 SEA ABB=ON PLU=ON C2CLF3/MF
 D 1-8 RN STR
 L88 3266 SEA ABB=ON PLU=ON 79-38-9/CRN
 E 75-02-5/MF
 E 75-02-5/RN
 L89 258 SEA ABB=ON PLU=ON 75-02-5/CRN
 E 116-14-3/CRN
 L90 4756 SEA ABB=ON PLU=ON 116-14-3/CRN
 E 74-85-1/CRN
 L91 13743 SEA ABB=ON PLU=ON 74-85-1/CRN

E C3H6/MF
E OXIRANE/CN
D SCAN
E C3H6/MF
L92 135 SEA ABB=ON PLU=ON C3H6/MF
E PROPENE/CN
L93 1 SEA ABB=ON PLU=ON PROPENE/CN
D SCAN
D RN
L94 6651 SEA ABB=ON PLU=ON 115-07-1/CRN

FILE 'LREGISTRY' ENTERED AT 17:23:47 ON 23 MAR 2006
L95 STR

FILE 'REGISTRY' ENTERED AT 17:42:51 ON 23 MAR 2006
L96 23 SEA SSS SAM L95
L97 SCR 2043
L98 50 SEA SSS SAM L95 AND L97
L99 30315 SEA SSS FUL L95 AND L97
SAV L99 WEI870/A
L100 4563 SEA ABB=ON PLU=ON (L90 OR L88 OR L66 OR L89 OR L86)
AND (L91 OR L99)

FILE 'HCAPLUS' ENTERED AT 17:50:35 ON 23 MAR 2006
D SCAN L1

FILE 'REGISTRY' ENTERED AT 17:50:35 ON 23 MAR 2006
L101 1 SEA ABB=ON PLU=ON 9002-89-5/RN
D SCAN
L102 1 SEA ABB=ON PLU=ON 25322-68-3/RN
D SCAN
L103 1 SEA ABB=ON PLU=ON 9003-39-8/RN
L104 1 SEA ABB=ON PLU=ON 9003-01-4/RN
D SCAN
L105 1 SEA ABB=ON PLU=ON 9003-05-8/RN
L106 1 SEA ABB=ON PLU=ON 9004-32-4/RN
L107 1 SEA ABB=ON PLU=ON 25322-68-3/RN
L108 1 SEA ABB=ON PLU=ON 9004-62-0/RN
L109 1 SEA ABB=ON PLU=ON 9004-65-3/RN
L110 1 SEA ABB=ON PLU=ON 9004-34-6/RN
E POLYETHYLENIMINE/CN
E POLYETHYLENIMINE/CN
L111 2 SEA ABB=ON PLU=ON POLYETHYLENIMINE/CN
D SCAN
D 1-2 RN
L112 1 SEA ABB=ON PLU=ON 26913-06-4/RN
D SCAN
L113 1 SEA ABB=ON PLU=ON 9002-98-6/RN
D SCAN
D L2 13 RN STR
D L2 18 RN STR

FILE 'HCAPLUS' ENTERED AT 18:04:36 ON 23 MAR 2006
D SCAN L1

FILE 'REGISTRY' ENTERED AT 18:05:47 ON 23 MAR 2006
L114 3 SEA ABB=ON PLU=ON L2 AND 1/S
D SCAN
L115 1 SEA ABB=ON PLU=ON 126-33-0/RN
D SCAN
L116 1 SEA ABB=ON PLU=ON 33454-82-9/RN
D SCAN

FILE 'HCAPLUS' ENTERED AT 18:08:08 ON 23 MAR 2006
L117 5987 SEA ABB=ON PLU=ON L100
D QUE STAT L85

D QUE L60

FILE 'REGISTRY' ENTERED AT 18:13:29 ON 23 MAR 2006

FILE 'HCAPLUS' ENTERED AT 18:13:39 ON 23 MAR 2006

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L118      2 SEA ABB=ON   PLU=ON   L60 AND L117
          D SCAN
L119      62070 SEA ABB=ON   PLU=ON   L101
L120      188 SEA ABB=ON   PLU=ON   L02
L121      27930 SEA ABB=ON   PLU=ON   L103
L122      19005 SEA ABB=ON   PLU=ON   L104
L123      24027 SEA ABB=ON   PLU=ON   L105
L124      24772 SEA ABB=ON   PLU=ON   L106
L125      88353 SEA ABB=ON   PLU=ON   L107
L126      9884 SEA ABB=ON   PLU=ON   L108
L127      11276 SEA ABB=ON   PLU=ON   L109
L128      10240 SEA ABB=ON   PLU=ON   L110/D OR L110/DP
L129      1417 SEA ABB=ON   PLU=ON   L112
L130      10249 SEA ABB=ON   PLU=ON   L113
L131      233164 SEA ABB=ON   PLU=ON   (L119 OR L120 OR L121 OR L122 OR
          L123 OR L124 OR L125 OR L126 OR L127 OR L128 OR L129
          OR L130)
L132      32 SEA ABB=ON   PLU=ON   L85 OR L118
L133      14 SEA ABB=ON   PLU=ON   L132 AND L131
L134      3992 SEA ABB=ON   PLU=ON   L115
L135      2636 SEA ABB=ON   PLU=ON   L116
L137      32 SEA ABB=ON   PLU=ON   L132 OR L133
L138      14 SEA ABB=ON   PLU=ON   L137 AND (L131 OR VISCOS?)
L139      18 SEA ABB=ON   PLU=ON   L137 NOT L138
L140      3 SEA ABB=ON   PLU=ON   L139 AND (EMULS? OR L26 OR L81)
L141      15 SEA ABB=ON   PLU=ON   L139 NOT L140
          D SCAN
          D QUE L3
L142      765 SEA ABB=ON   PLU=ON   ((LITHIUM OR LI OR SECONDAR? OR
          2ND) (A) (SULFUR OR SULPHUR OR S)) (3A) BATTER?
L143      19 SEA ABB=ON   PLU=ON   L137 AND L142
L144      32 SEA ABB=ON   PLU=ON   L143 OR L137
L145      14 SEA ABB=ON   PLU=ON   L144 AND L138
L146      18 SEA ABB=ON   PLU=ON   L144 AND L139
L147      3 SEA ABB=ON   PLU=ON   L144 AND L140
L148      15 SEA ABB=ON   PLU=ON   L144 AND L141
L149      1 SEA ABB=ON   PLU=ON   L1 AND L144

=> => d que stat l147
L3      556 SEA FILE=HCAPLUS ABB=ON   PLU=ON   ((LITHIUM OR LI) (A) (SU
          LFUR OR SULPHUR OR S)) (3A) BATTER?
L4      41103 SEA FILE=HCAPLUS ABB=ON   PLU=ON   BUTADIENE (2A) (COPOLYM?
          OR CO (W) POLYM?)
L5      3 SEA FILE=HCAPLUS ABB=ON   PLU=ON   L3 AND L4
L7      10076 SEA FILE=REGISTRY ABB=ON   PLU=ON   106-99-0/CRN
L8      18723 SEA FILE=REGISTRY ABB=ON   PLU=ON   107-13-1/CRN
L9      72307 SEA FILE=REGISTRY ABB=ON   PLU=ON   100-42-5/CRN
L10     1650 SEA FILE=REGISTRY ABB=ON   PLU=ON   L7 AND L8 AND L9
L11     2922 SEA FILE=REGISTRY ABB=ON   PLU=ON   L7 AND L8
L12     5168 SEA FILE=REGISTRY ABB=ON   PLU=ON   L7 AND L9
L13     1 SEA FILE=REGISTRY ABB=ON   PLU=ON   7704-34-9/RN
L14     236 SEA FILE=REGISTRY ABB=ON   PLU=ON   S/ELS (L) 1/ELC.SUB
L15     14 SEA FILE=REGISTRY ABB=ON   PLU=ON   L14 AND S8
L16     161564 SEA FILE=HCAPLUS ABB=ON   PLU=ON   L14
L17     923 SEA FILE=HCAPLUS ABB=ON   PLU=ON   L15
L18     1 SEA FILE=REGISTRY ABB=ON   PLU=ON   7439-93-2/RN
L19     80389 SEA FILE=HCAPLUS ABB=ON   PLU=ON   L18
L20     135539 SEA FILE=HCAPLUS ABB=ON   PLU=ON   L13
L21     556 SEA FILE=HCAPLUS ABB=ON   PLU=ON   ((L19 OR LITHIUM OR
          LI) (A) (L20 OR L16 OR L17 OR SULFUR OR SULPHUR OR

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S)) (3A) BATTER?

L23 270 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 AND (CATHOD? OR
POSITIV? (A) ELECTROD?)

L24 3464 SEA FILE=HCAPLUS ABB=ON PLU=ON CONDUCT? (2A) AGENT?

L25 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND L24

L26 160095 SEA FILE=HCAPLUS ABB=ON PLU=ON (ORGANIC? OR NONPOLAR?
OR NON (W) POLAR?) (2A) SOLVENT?

L27 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L26 AND L25

L28 2596 SEA FILE=HCAPLUS ABB=ON PLU=ON (CATHOD? OR POSITIV? (A)
) ELECTROD?) (3A) (L20 OR L16 OR L17 OR SULFUR OR SULPHUR
OR S)

L29 10 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND L24

L30 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND L26

L31 138401 SEA FILE=HCAPLUS ABB=ON PLU=ON L7

L32 142919 SEA FILE=HCAPLUS ABB=ON PLU=ON L4 OR L31

L33 16 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L21

L34 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L23

L35 19 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L28

L36 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L35 AND (L24 OR L26)

L37 25985 SEA FILE=HCAPLUS ABB=ON PLU=ON L10

L38 27678 SEA FILE=HCAPLUS ABB=ON PLU=ON L37 OR (ACRYLONITRILE(
3A) BUTADIENE (3A) STYRENE)

L39 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 AND L38

L40 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND L38

L41 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND L38

L42 6 SEA FILE=HCAPLUS ABB=ON PLU=ON (L39 OR L40 OR L41)

L43 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L42 AND L24

L44 50636 SEA FILE=HCAPLUS ABB=ON PLU=ON L11

L45 52964 SEA FILE=HCAPLUS ABB=ON PLU=ON L44 OR (ACRYLONITRILE(
A) BUTADIENE)

L46 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND L21

L47 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND L23

L48 8 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND L28

L49 87240 SEA FILE=HCAPLUS ABB=ON PLU=ON L12

L50 93938 SEA FILE=HCAPLUS ABB=ON PLU=ON L49 OR (STYRENE (A) BUTA
DIENE)

L51 15 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 AND L21

L52 12 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 AND L23

L53 15 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 AND L28

L54 23 SEA FILE=HCAPLUS ABB=ON PLU=ON (L33 OR L34 OR L35 OR
L36) OR (L39 OR L40 OR L41 OR L42 OR L43) OR (L46 OR
L47 OR L48) OR (L51 OR L52 OR L53)

L55 10568 SEA FILE=REGISTRY ABB=ON PLU=ON FLUOROPOLYMER?/PCT

L56 81458 SEA FILE=HCAPLUS ABB=ON PLU=ON L55

L57 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L56 AND L54

L58 2999 SEA FILE=HCAPLUS ABB=ON PLU=ON L3 OR L21 OR L23 OR
L28

L59 119622 SEA FILE=HCAPLUS ABB=ON PLU=ON L4 OR L38 OR L45 OR
L50

L60 20 SEA FILE=HCAPLUS ABB=ON PLU=ON L58 AND L59

L61 114716 SEA FILE=HCAPLUS ABB=ON PLU=ON L56 OR FLUOROPOLYM?

L62 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L60 AND L61

L63 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L62 AND (L24 OR L26)

L65 1960 SEA FILE=REGISTRY ABB=ON PLU=ON 116-15-4/CRN

L66 2316 SEA FILE=REGISTRY ABB=ON PLU=ON 75-38-7/CRN

L67 647 SEA FILE=REGISTRY ABB=ON PLU=ON L65 AND L66

L68 5480 SEA FILE=HCAPLUS ABB=ON PLU=ON L67

L71 6405 SEA FILE=HCAPLUS ABB=ON PLU=ON L65 AND L66

L72 6405 SEA FILE=HCAPLUS ABB=ON PLU=ON L68 OR L71

L73 9 SEA FILE=HCAPLUS ABB=ON PLU=ON L60 AND L72

L74 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L73 AND (L24 OR L26)

L75 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L5 OR L25 OR L27 OR
L29 OR L30 OR L54 OR L57 OR L60 OR L62 OR L63 OR L73
OR L74

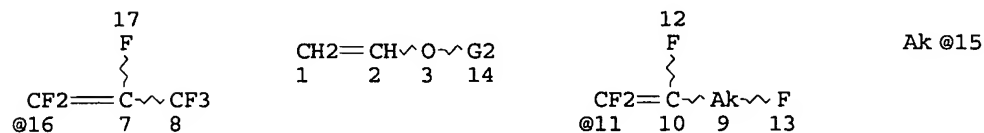
L76 374637 SEA FILE=HCAPLUS ABB=ON PLU=ON VISOS?

L77 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L75 AND L76

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L78      5968 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L76 (5A) CONTROL?
L79      2 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L75 AND L78
L80     32 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L75 OR L77 OR L79
L81      QUE ABB=ON  PLU=ON  MICRON? OR MICROMET? OR (MU OR MIC
      RO) (A) (METER OR METRE OR M)
L82      3 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L80 AND L81
L83      1 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L80 AND EMULS?
L84      4 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L82 OR L83
L85     32 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L80 OR (L82 OR L83 OR
      L84)
L86      79 SEA FILE=REGISTRY ABB=ON  PLU=ON  660-78-6/CRN
L88     3266 SEA FILE=REGISTRY ABB=ON  PLU=ON  79-38-9/CRN
L89     258 SEA FILE=REGISTRY ABB=ON  PLU=ON  75-02-5/CRN
L90     4756 SEA FILE=REGISTRY ABB=ON  PLU=ON  116-14-3/CRN
L91    13743 SEA FILE=REGISTRY ABB=ON  PLU=ON  74-85-1/CRN
L95      STR

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VAR G2=15/16/11

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X20 C AT 9

ECOUNT IS M1-X20 C AT 15

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 14

STEREO ATTRIBUTES: NONE

L97 SCR 2043

L99 30315 SEA FILE=REGISTRY SSS FUL L95 AND L97

L100 4563 SEA FILE=REGISTRY ABB=ON PLU=ON (L90 OR L88 OR L66
OR L89 OR L86) AND (L91 OR L99)

L101 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9002-89-5/RN

L103 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9003-39-8/RN

L104 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9003-01-4/RN

L105 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9003-05-8/RN

L106 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-32-4/RN

L107 1 SEA FILE=REGISTRY ABB=ON PLU=ON 25322-68-3/RN

L108 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-62-0/RN

L109 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-65-3/RN

L110 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-34-6/RN

L112 1 SEA FILE=REGISTRY ABB=ON PLU=ON 26913-06-4/RN

L113 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9002-98-6/RN

L115 1 SEA FILE=REGISTRY ABB=ON PLU=ON 126-33-0/RN

L116 1 SEA FILE=REGISTRY ABB=ON PLU=ON 33454-82-9/RN

L117 5987 SEA FILE=HCAPLUS ABB=ON PLU=ON L100

L118 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L60 AND L117

L119 62070 SEA FILE=HCAPLUS ABB=ON PLU=ON L101

L120 188 SEA FILE=HCAPLUS ABB=ON PLU=ON L02

L121 27930 SEA FILE=HCAPLUS ABB=ON PLU=ON L103

L122 19005 SEA FILE=HCAPLUS ABB=ON PLU=ON L104

L123 24027 SEA FILE=HCAPLUS ABB=ON PLU=ON L105

L124 24772 SEA FILE=HCAPLUS ABB=ON PLU=ON L106

L125 88353 SEA FILE=HCAPLUS ABB=ON PLU=ON L107

L126 9884 SEA FILE=HCAPLUS ABB=ON PLU=ON L108

L127 11276 SEA FILE=HCAPLUS ABB=ON PLU=ON L109

L128 10240 SEA FILE=HCAPLUS ABB=ON PLU=ON L110/D OR L110/DP

L129 1417 SEA FILE=HCAPLUS ABB=ON PLU=ON L112

L130 10249 SEA FILE=HCAPLUS ABB=ON PLU=ON L113

L131 233164 SEA FILE=HCAPLUS ABB=ON PLU=ON (L119 OR L120 OR L121
OR L122 OR L123 OR L124 OR L125 OR L126 OR L127 OR
L128 OR L129 OR L130)
L132 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L85 OR L118
L133 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L132 AND L131
L134 3992 SEA FILE=HCAPLUS ABB=ON PLU=ON L115
L135 2636 SEA FILE=HCAPLUS ABB=ON PLU=ON L116
L137 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L132 OR L133 OR L***
L138 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L137 AND (L131 OR
VISCOS?)
L139 18 SEA FILE=HCAPLUS ABB=ON PLU=ON L137 NOT L138
L140 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L139 AND (EMULS? OR
L26 OR L81)
L142 765 SEA FILE=HCAPLUS ABB=ON PLU=ON ((LITHIUM OR LI OR
SECONDAR? OR 2ND) (A) (SULFUR OR SULPHUR OR S)) (3A) BATTER
?
L143 19 SEA FILE=HCAPLUS ABB=ON PLU=ON L137 AND L142
L144 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L143 OR L137
L147 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L144 AND L140

=> d 1147 1-3 ibib abs hitstr hitind

L147 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:1129921 HCAPLUS <<LOGINID::20060323>>
DOCUMENT NUMBER: 143:370132
TITLE: Lithium ion secondary batteries and their
manufacture
INVENTOR(S): Kato, Kiyomi; Inoue, Kaoru
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd.,
Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2005294139	A2	20051020	JP 2004-109806	2004 0402
PRIORITY APPLN. INFO.:			JP 2004-109806	2004 0402

AB The battery comprises (a) a lithium mixed oxide cathode, (b) an anode, (c) a separator, (d) a nonaq. electrolyte solution, and (e) a porous film formed on the surfaces) of the cathode or the anode. The said porous film consists of inorg. particles and binders with the particles on the surface side having larger size than those on the side contacting the electrode. Preferably, the size of the particles in the surface part is 1-3 .mu.m and that in the part nearest to the electrode is 0.1-0.5 .mu.m. The batteries have excellent resistance to short circuit and heat.

IT 9003-18-3D, hydrogenated
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, BM-720H, binder; manufacture of Li ion secondary batteries with particle size-graded porous layer on electrode surface for heat resistance)

RN 9003-18-3 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX

NAME)

CM 1

CRN 107-13-1

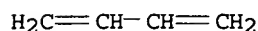
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IC ICM H01M010-40

ICS H01M002-16; H01M004-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 9003-18-3D, hydrogenated

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(nitrile rubber, BM-720H, binder; manufacture of Li ion secondary batteries with particle size-graded porous layer on electrode surface for heat resistance)

L147 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:219961 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 142:282885

TITLE: Organic electrolytic solution for
lithium-sulfur
batteryINVENTOR(S): Ryu, Young-Gyoon; Cho, Myung-Dong; Lee,
Sang-Mock; Trofimov, Boris A.

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 7 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

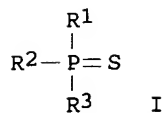
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2005053842	A1	20050310	US 2004-927188	2004 0827
JP 2005085761	A2	20050331	JP 2004-257357	2004 0903
CN 1610178	A	20050427	CN 2004-10068748	2004 0906
PRIORITY APPLN. INFO.:		KR 2003-62171	A	2003 0905

OTHER SOURCE(S): MARPAT 142:282885

GI

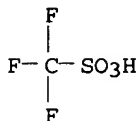


AB An organic electrolytic solution for alithium-sulfur battery that can improve discharge capacity and cycle life of the battery, and a lithium-sulfur battery using the organic electrolytic solution are disclosed. The electrolytic solution includes a lithium salt, arorganic solvent, and further a phosphine sulfide-based compound represented by formula (I), wherein R1, R2 and R3 are the same or different from each other, and each represents one selected from the group consisting of a substituted or unsubstituted C1-30 alkyl group, a substituted or unsubstituted C6-30 aryl group, a substituted or unsubstituted C1-30 alkoxy group and a substituted or unsubstituted C8-30 Ar-alkenyl group. The electrolytic solution including the phosphine sulfide-based compound represented by I can suppress production of lithium sulfides so that a reduction in battery capacity can be prevented.

IT 33454-82-9, Lithium triflate
 RL: DEV (Device component use); USES (Uses)
 (organic electrolytic solution forlithium-sulfur battery)

RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 9003-55-8
 RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber; organic electrolytic solution forlithium-sulfur battery)

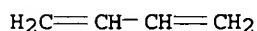
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8

 $\text{H}_2\text{C}=\text{CH}-\text{Ph}$

IC ICM H01M004-58
ICS H01M010-40; H01M004-62
INCL 429326000; 429340000; 429218100; 429329000; 429232000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium sulfur battery org
electrolyte
IT Esters, uses
RL: DEV (Device component use); USES (Uses)
(alkyl; organic electrolytic solution forlithium-sulfur battery)
IT Nitriles, uses
RL: DEV (Device component use); USES (Uses)
(aromatic; organic electrolytic solution forlithium-sulfur battery)
IT Secondary batteries
(lithium; organic electrolytic solution forlithium-sulfur battery)
IT Battery electrolytes
(organic electrolytic solution forlithium-sulfur battery)
IT Amides, uses
Lactones
Polyethers, uses
RL: DEV (Device component use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)
IT Carbon black, uses
RL: MOA (Modifier or additive use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)
IT Carbon fibers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)
IT Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)
IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)
IT 79-20-9, Methyl acetate 96-47-9, 2-Methyltetrahydrofuran
105-58-8, Diethyl carbonate 107-31-3, Methyl formate 109-99-9,
Thf, uses 110-71-4 463-79-6D, Carbonic acid, ester 554-12-1,
Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0,
Methyl ethyl carbonate 623-96-1, Dipropyl carbonate 646-06-0,
1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-Dioxolane 4319-13-5
7439-93-2, Lithium, uses 7440-44-0D, Carbon, polymers, with
sulfur 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, polymers,
with carbon 7791-03-9, Lithium perchlorate 9002-88-4,
Polyethylene 9003-07-0, Polypropylene 14283-07-9, Lithium
tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
29935-35-1, Lithium hexafluoroarsenate 33454-82-9,
Lithium triflate 56525-42-9, Methyl propyl carbonate
74432-42-1, Lithium polysulfide 90076-65-6 132404-42-3
132843-44-8
RL: DEV (Device component use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)

IT 7782-42-5, Graphite, uses
RL: MOA (Modifier or additive use); USES (Uses)
(organic electrolytic solution for **lithium-sulfur battery**)

IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
(**styrene-butadiene** rubber; organic
electrolytic solution for **lithium-sulfur battery**)

L147 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:219959 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 142:300973

TITLE: Organic electrolytic solution for
lithium-sulfur battery

INVENTOR(S): Ryu, Young-Gyoon; Cho, Myung-Dong; Lee,
Sang-Mock; Trofimov, Boris A.

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2005053839	A1	20050310	US 2004-927182	2004 0827
JP 2005085760	A2	20050331	JP 2004-257356	2004 0903
PRIORITY APPLN. INFO.:		KR 2003-62172	A	2003 0905

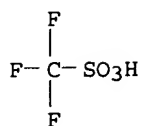
OTHER SOURCE(S): MARPAT 142:300973

AB An organic electrolytic solution for **alithium-sulfur battery** that provides high discharge capacity and longer cycle life to the **battery**, and a **lithium-sulfur battery** including the organic electrolytic solution are provided. The electrolytic solution includes a lithium salt, an **organic solvent**, and further a compound represented by the formula $[R1CH(OR2)CH2]2Sx$ where R1 is selected from the group consisting of a H, a substituted or unsubstituted C1-30 alkyl group, a substituted or unsubstituted C1-30 alkoxy group, a substituted or unsubstituted C6-30 aryl group, and a substituted or unsubstituted C8-30 Ar alkenyl group; R2 represents a group of the formula $(R3O)R4(R5O)C$ or $R6R7R8Si$; wherein R3-R8 are independently a H atom, a C1-5 linear or branched alkoxy group; and x is an integer from 2-5.

IT 33454-82-9, Lithium triflate
RL: DEV (Device component use); USES (Uses)
(organic electrolytic solution for **lithium-sulfur battery**)

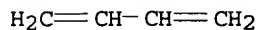
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA
INDEX NAME)

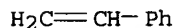


● Li

IT 9003-55-8
 RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber; organic
 electrolytic solution forlithium-sulfur
 battery)
 RN 9003-55-8 HCAPLUS
 CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
 NAME)
 CM 1
 CRN 106-99-0
 CMF C4 H6



CM 2
 CRN 100-42-5
 CMF C8 H8



IC ICM H01M004-58
 ICS H01M004-60; H01M006-16
 INCL 429231950; 429188000; 429336000; 429337000; 429339000; 429340000;
 429341000; 429342000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium sulfur battery org
 electrolyte polysulfide
 IT Esters, uses
 RL: DEV (Device component use); USES (Uses)
 (alkyl; organic electrolytic solution forlithium-
 sulfur battery)
 IT Nitriles, uses
 RL: DEV (Device component use); USES (Uses)
 (aromatic; organic electrolytic solution forlithium-
 sulfur battery)
 IT Secondary batteries
 (lithium; organic electrolytic solution forlithium-
 sulfur battery)
 IT Battery electrolytes
 (organic electrolytic solution forlithium-sulfur
 battery)
 IT Amides, uses
 Lactones
 Polyethers, uses
 Polysulfides
 RL: DEV (Device component use); USES (Uses)

(organic electrolytic solution forlithium-sulfur battery)

IT Carbon black, uses
RL: MOA (Modifier or additive use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)

IT Carbon fibers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)

IT Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)

IT 79-20-9, Methyl acetate 96-47-9, 2-Methyltetrahydrofuran
96-48-0 105-58-8, Diethyl carbonate 107-31-3, Methyl formate
109-99-9, Thf, uses 110-71-4 463-79-6D, Carbonic acid, ester
554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate
623-53-0, Methylene carbonate 623-96-1, Dipropyl carbonate
646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-Dioxolane
7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7704-34-9,
Sulfur, uses 7704-34-9D, Sulfur, carbon compound, polymer
7704-34-9D, Sulfur, compound 7791-03-9, Lithium perchlorate
9002-88-4, Polyethylene 9003-07-0, Polypropylene 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, Lithium
hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium triflate 56525-42-9,
Methylpropylcarbonate 74432-42-1, Lithium polysulfide
90076-65-6 132404-42-3 132843-44-8 847612-71-9
RL: DEV (Device component use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)

IT 7782-42-5, Graphite, uses
RL: MOA (Modifier or additive use); USES (Uses)
(organic electrolytic solution forlithium-sulfur battery)

IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; organic
electrolytic solution forlithium-sulfur
battery)

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L3 556 SEA FILE=HCAPLUS ABB=ON PLU=ON ((LITHIUM OR LI) (A) (SU
LFUR OR SULPHUR OR S)) (3A) BATTER?

L4 41103 SEA FILE=HCAPLUS ABB=ON PLU=ON BUTADIENE (2A) (COPOLYM?
OR CO (W) POLYM?)

L5 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L3 AND L4

L7 10076 SEA FILE=REGISTRY ABB=ON PLU=ON 106-99-0/CRN

L8 18723 SEA FILE=REGISTRY ABB=ON PLU=ON 107-13-1/CRN

L9 72307 SEA FILE=REGISTRY ABB=ON PLU=ON 100-42-5/CRN

L10 1650 SEA FILE=REGISTRY ABB=ON PLU=ON L7 AND L8 AND L9

L11 2922 SEA FILE=REGISTRY ABB=ON PLU=ON L7 AND L8

L12 5168 SEA FILE=REGISTRY ABB=ON PLU=ON L7 AND L9

L13 1 SEA FILE=REGISTRY ABB=ON PLU=ON 7704-34-9/RN

L14 236 SEA FILE=REGISTRY ABB=ON PLU=ON S/ELS (L) 1/ELC.SUB

L15 14 SEA FILE=REGISTRY ABB=ON PLU=ON L14 AND S8

L16 161564 SEA FILE=HCAPLUS ABB=ON PLU=ON L14

L17 923 SEA FILE=HCAPLUS ABB=ON PLU=ON L15

L18 1 SEA FILE=REGISTRY ABB=ON PLU=ON 7439-93-2/RN

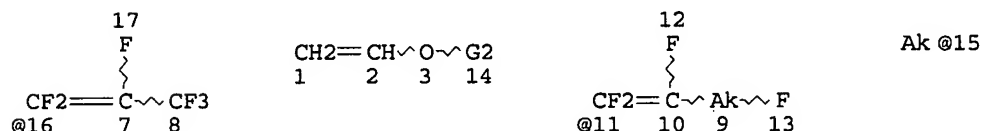
L19 80389 SEA FILE=HCAPLUS ABB=ON PLU=ON L18

L20 135539 SEA FILE=HCAPLUS ABB=ON PLU=ON L13
 L21 556 SEA FILE=HCAPLUS ABB=ON PLU=ON ((L19 OR LITHIUM OR
 LI) (A) (L20 OR L16 OR L17 OR SULFUR OR SULPHUR OR
 S)) (3A) BATTER?
 L23 270 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 AND (CATHOD? OR
 POSITIV? (A) ELECTROD?)
 L24 3464 SEA FILE=HCAPLUS ABB=ON PLU=ON CONDUCT? (2A) AGENT?
 L25 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND L24
 L26 160095 SEA FILE=HCAPLUS ABB=ON PLU=ON (ORGANIC? OR NONPOLAR?
 OR NON(W) POLAR?) (2A) SOLVENT?
 L27 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L26 AND L25
 L28 2596 SEA FILE=HCAPLUS ABB=ON PLU=ON (CATHOD? OR POSITIV? (A)
) ELECTROD?) (3A) (L20 OR L16 OR L17 OR SULFUR OR SULPHUR
 OR S)
 L29 10 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND L24
 L30 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND L26
 L31 138401 SEA FILE=HCAPLUS ABB=ON PLU=ON L7
 L32 142919 SEA FILE=HCAPLUS ABB=ON PLU=ON L4 OR L31
 L33 16 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L21
 L34 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L23
 L35 19 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L28
 L36 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L35 AND (L24 OR L26)
 L37 25985 SEA FILE=HCAPLUS ABB=ON PLU=ON L10
 L38 27678 SEA FILE=HCAPLUS ABB=ON PLU=ON L37 OR (ACRYLONITRILE(
 3A) BUTADIENE (3A) STYRENE)
 L39 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 AND L38
 L40 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND L38
 L41 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND L38
 L42 6 SEA FILE=HCAPLUS ABB=ON PLU=ON (L39 OR L40 OR L41)
 L43 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L42 AND L24
 L44 50636 SEA FILE=HCAPLUS ABB=ON PLU=ON L11
 L45 52964 SEA FILE=HCAPLUS ABB=ON PLU=ON L44 OR (ACRYLONITRILE(
 A) BUTADIENE)
 L46 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND L21
 L47 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND L23
 L48 8 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND L28
 L49 87240 SEA FILE=HCAPLUS ABB=ON PLU=ON L12
 L50 93938 SEA FILE=HCAPLUS ABB=ON PLU=ON L49 OR (STYRENE (A) BUTA
 DIENE)
 L51 15 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 AND L21
 L52 12 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 AND L23
 L53 15 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 AND L28
 L54 23 SEA FILE=HCAPLUS ABB=ON PLU=ON (L33 OR L34 OR L35 OR
 L36) OR (L39 OR L40 OR L41 OR L42 OR L43) OR (L46 OR
 L47 OR L48) OR (L51 OR L52 OR L53)
 L55 10568 SEA FILE=REGISTRY ABB=ON PLU=ON FLUOROPOLYMER?/PCT
 L56 81458 SEA FILE=HCAPLUS ABB=ON PLU=ON L55
 L57 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L56 AND L54
 L58 2999 SEA FILE=HCAPLUS ABB=ON PLU=ON L3 OR L21 OR L23 OR
 L28
 L59 119622 SEA FILE=HCAPLUS ABB=ON PLU=ON L4 OR L38 OR L45 OR
 L50
 L60 20 SEA FILE=HCAPLUS ABB=ON PLU=ON L58 AND L59
 L61 114716 SEA FILE=HCAPLUS ABB=ON PLU=ON L56 OR FLUOROPOLYM?
 L62 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L60 AND L61
 L63 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L62 AND (L24 OR L26)
 L65 1960 SEA FILE=REGISTRY ABB=ON PLU=ON 116-15-4/CRN
 L66 2316 SEA FILE=REGISTRY ABB=ON PLU=ON 75-38-7/CRN
 L67 647 SEA FILE=REGISTRY ABB=ON PLU=ON L65 AND L66
 L68 5480 SEA FILE=HCAPLUS ABB=ON PLU=ON L67
 L71 6405 SEA FILE=HCAPLUS ABB=ON PLU=ON L65 AND L66
 L72 6405 SEA FILE=HCAPLUS ABB=ON PLU=ON L68 OR L71
 L73 9 SEA FILE=HCAPLUS ABB=ON PLU=ON L60 AND L72
 L74 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L73 AND (L24 OR L26)
 L75 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L5 OR L25 OR L27 OR
 L29 OR L30 OR L54 OR L57 OR L60 OR L62 OR L63 OR L73

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OR L74
L76      374637 SEA FILE=HCAPLUS ABB=ON PLU=ON VISCOS?
L77      3 SEA FILE=HCAPLUS ABB=ON PLU=ON L75 AND L76
L78      5968 SEA FILE=HCAPLUS ABB=ON PLU=ON L76 (5A) CONTROL?
L79      2 SEA FILE=HCAPLUS ABB=ON PLU=ON L75 AND L78
L80      32 SEA FILE=HCAPLUS ABB=ON PLU=ON L75 OR L77 OR L79
L81      QUE ABB=ON PLU=ON MICRON? OR MICROMET? OR (MU OR MIC
          RO) (A) (METER OR METRE OR M)
L82      3 SEA FILE=HCAPLUS ABB=ON PLU=ON L80 AND L81
L83      1 SEA FILE=HCAPLUS ABB=ON PLU=ON L80 AND EMULS?
L84      4 SEA FILE=HCAPLUS ABB=ON PLU=ON L82 OR L83
L85      32 SEA FILE=HCAPLUS ABB=ON PLU=ON L80 OR (L82 OR L83 OR
          L84)
L86      79 SEA FILE=REGISTRY ABB=ON PLU=ON 660-78-6/CRN
L88      3266 SEA FILE=REGISTRY ABB=ON PLU=ON 79-38-9/CRN
L89      258 SEA FILE=REGISTRY ABB=ON PLU=ON 75-02-5/CRN
L90      4756 SEA FILE=REGISTRY ABB=ON PLU=ON 116-14-3/CRN
L91      13743 SEA FILE=REGISTRY ABB=ON PLU=ON 74-85-1/CRN
L95      STR

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VAR G2=15/16/11
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS M1-X20 C AT 9
ECOUNT IS M1-X20 C AT 15

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GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 14

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STEREO ATTRIBUTES: NONE

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L97      SCR 2043
L99      30315 SEA FILE=REGISTRY SSS FUL L95 AND L97
L100     4563 SEA FILE=REGISTRY ABB=ON PLU=ON (L90 OR L88 OR L66
          OR L89 OR L86) AND (L91 OR L99)
L101     1 SEA FILE=REGISTRY ABB=ON PLU=ON 9002-89-5/RN
L103     1 SEA FILE=REGISTRY ABB=ON PLU=ON 9003-39-8/RN
L104     1 SEA FILE=REGISTRY ABB=ON PLU=ON 9003-01-4/RN
L105     1 SEA FILE=REGISTRY ABB=ON PLU=ON 9003-05-8/RN
L106     1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-32-4/RN
L107     1 SEA FILE=REGISTRY ABB=ON PLU=ON 25322-68-3/RN
L108     1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-62-0/RN
L109     1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-65-3/RN
L110     1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-34-6/RN
L112     1 SEA FILE=REGISTRY ABB=ON PLU=ON 26913-06-4/RN
L113     1 SEA FILE=REGISTRY ABB=ON PLU=ON 9002-98-6/RN
L115     1 SEA FILE=REGISTRY ABB=ON PLU=ON 126-33-0/RN
L116     1 SEA FILE=REGISTRY ABB=ON PLU=ON 33454-82-9/RN
L117     5987 SEA FILE=HCAPLUS ABB=ON PLU=ON L100
L118     2 SEA FILE=HCAPLUS ABB=ON PLU=ON L60 AND L117
L119     62070 SEA FILE=HCAPLUS ABB=ON PLU=ON L101
L120     188 SEA FILE=HCAPLUS ABB=ON PLU=ON L02
L121     27930 SEA FILE=HCAPLUS ABB=ON PLU=ON L103
L122     19005 SEA FILE=HCAPLUS ABB=ON PLU=ON L104
L123     24027 SEA FILE=HCAPLUS ABB=ON PLU=ON L105
L124     24772 SEA FILE=HCAPLUS ABB=ON PLU=ON L106
L125     88353 SEA FILE=HCAPLUS ABB=ON PLU=ON L107
L126     9884 SEA FILE=HCAPLUS ABB=ON PLU=ON L108
L127     11276 SEA FILE=HCAPLUS ABB=ON PLU=ON L109

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L128 10240 SEA FILE=HCAPLUS ABB=ON PLU=ON L110/D OR L110/DP
 L129 1417 SEA FILE=HCAPLUS ABB=ON PLU=ON L112
 L130 10249 SEA FILE=HCAPLUS ABB=ON PLU=ON L113
 L131 233164 SEA FILE=HCAPLUS ABB=ON PLU=ON (L119 OR L120 OR L121
 OR L122 OR L123 OR L124 OR L125 OR L126 OR L127 OR
 L128 OR L129 OR L130)
 L132 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L85 OR L118
 L133 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L132 AND L131
 L134 3992 SEA FILE=HCAPLUS ABB=ON PLU=ON L115
 L135 2636 SEA FILE=HCAPLUS ABB=ON PLU=ON L116
 L137 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L132 OR L133 OR L***
 L138 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L137 AND (L131 OR
 VISCOS?)
 L142 765 SEA FILE=HCAPLUS ABB=ON PLU=ON ((LITHIUM OR LI OR
 SECONDAR? OR 2ND) (A) (SULFUR OR SULPHUR OR S)) (3A) BATTER
 ?
 L143 19 SEA FILE=HCAPLUS ABB=ON PLU=ON L137 AND L142
 L144 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L143 OR L137
 L145 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L144 AND L138

=> d l145 1-14 ibib abs hitstr hitind

L145 ANSWER 1 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:1019589 HCAPLUS <<LOGINID::20060323>>
 DOCUMENT NUMBER: 142:9218
 TITLE: Cathodes for lithium secondary batteries
 INVENTOR(S): Kim, Jan-Dee; Kim, Seok; Choi, Su-Suk; Han,
 Ji-Seong
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 11 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2004234851	A1	20041125	US 2004-845192	2004 0514
CN 1574427	A	20050202	CN 2004-10071492	2004 0522
JP 2004349263	A2	20041209	JP 2004-152981	2004 0524
PRIORITY APPLN. INFO.:		KR 2003-32549	A	2003 0522

AB The cathode of a Li secondary battery contains a cathode active
 material, an elec. conductive material, a binder, and a thickener
 - a nonionic cellulose-based compound
 IT 9004-62-0, Hydroxyethyl cellulose 9004-65-3,
 Hydroxypropyl methyl cellulose 9011-17-0
 10544-50-0, Sulfur (S8), uses 24937-79-9
 , Polyvinylidene fluoride 725228-54-6D, sulfonated
 RL: DEV (Device component use); USES (Uses)
 (cathode material for lithium secondary battery)
 RN 9004-62-0 HCAPLUS
 CN Cellulose, 2-hydroxyethyl ether (8CI, 9CI) (CA INDEX NAME)

CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 107-21-1
CMF C2 H6 O2

HO-CH₂-CH₂-OH

RN 9004-65-3 HCAPLUS
CN Cellulose, 2-hydroxypropyl methyl ether (9CI) (CA INDEX NAME)

CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 67-56-1
CMF C H4 O

H₃C-OH

CM 3

CRN 57-55-6
CMF C3 H8 O2

OH
|
H₃C-CH-CH₂-OH

RN 9011-17-0 HCAPLUS
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4
CMF C3 F6

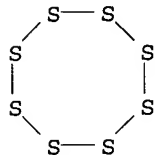
CF₂
||
F-C-CF₃

CM 2

CRN 75-38-7
CMF C2 H2 F2



RN 10544-50-0 HCAPLUS
CN Sulfur, mol. (S8) (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

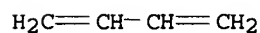
CRN 75-38-7
CMF C2 H2 F2



RN 725228-54-6 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene and ethene, triblock (9CI) (CA INDEX NAME)

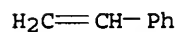
CM 1

CRN 106-99-0
CMF C4 H6



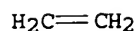
CM 2

CRN 100-42-5
CMF C8 H8

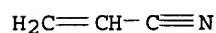


CM 3

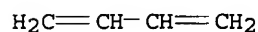
CRN 74-85-1
CMF C2 H4



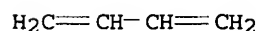
IT 9003-18-3
RL: DEV (Device component use); USES (Uses)
(nitrile rubber; cathode material for lithium secondary
battery)
RN 9003-18-3 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)
CM 1
CRN 107-13-1
CMF C3 H3 N



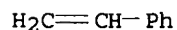
CM 2
CRN 106-99-0
CMF C4 H6



IT 9003-55-8
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; cathode material
for lithium secondary battery)
RN 9003-55-8 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)
CM 1
CRN 106-99-0
CMF C4 H6



CM 2
CRN 100-42-5
CMF C8 H8



IC ICM H01M004-62
ICS H01M004-58; H01M004-60
INCL 429217000; 429218100; 429213000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium battery cathode sulfur carbon binder
thickener
IT Carbon black, uses
Fluoropolymers, uses

Nitrile rubber, uses

Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)

(cathode material for lithium secondary battery)

IT 9004-62-0, Hydroxyethyl cellulose 9004-64-2,
Hydroxypropyl cellulose 9004-65-3, Hydroxypropyl methyl
cellulose 9004-67-5, Methyl cellulose 9011-17-0
9062-14-0, Hydroxypropyl ethyl cellulose 10544-50-0,
Sulfur (S8), uses 12136-58-2, Lithium sulfide
24937-79-9, Polyvinylidene fluoride 63143-57-7, Carbon
sulfide 725228-54-6D, sulfonated

RL: DEV (Device component use); USES (Uses)

(cathode material for lithium secondary battery)

IT 9003-18-3

RL: DEV (Device component use); USES (Uses)

(nitrile rubber; cathode material for lithium secondary
battery)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)

(**styrene-butadiene** rubber; cathode material
for lithium secondary battery)

L145 ANSWER 2 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:943544 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 142:180346

TITLE: **Positive electrode for
lithium-sulfur**

INVENTOR(S): **battery** and preparation method thereof

Cho, Ji Hun; Jang, Deok Rye; Jun, Sang Eun;
Kim, Hui Tak; Kim, Seon Uk; Ko, Gi Seok; Kwon,
Chang Wi

PATENT ASSIGNEE(S): Newturn Energy Co., Ltd., S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp.
given
CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	

KR 2003006745	A	20030123	KR 2001-42634	

2001
0714

PRIORITY APPLN. INFO.: KR 2001-42634

2001
0714

AB A composite **pos. electrode** composition for a
lithium-sulfur primary or secondary
battery, a **pos. electrode** prepared from
the composition and its preparation method are provided, to increase the
capacity by improving the utilization rate of sulfur active
material and to improve the lifetime of a battery by enhancing the
mech. properties of a **pos. electrode**. The
composite **pos. electrode** composition comprises a
sulfur or organosulfur compound which is such that sulfur
elements can be combined and separated during the repeated charging
and discharging process; a conductive material selected from
conductive carbon and conductive polymers; and a binder material
comprising a **butadiene**-based copolymer and a
polysaccharide-based polymer. Preferably the binder material
comprises 1-10 parts by weight of **butadiene-styrene**
and 1-10 parts by weight of CM-cellulose based on 100 parts by weight of

the electrode, and optionally comprises further a fluorine-based polymer.

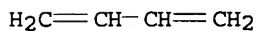
IT 7704-34-9D, Sulfur, compds.
RL: DEV (Device component use); USES (Uses)
(pos. electrode for lithium
sulfur battery and preparation method thereof)
RN 7704-34-9 HCAPLUS
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-55-8, Styrene-butadiene
copolymer 9004-32-4
RL: DEV (Device component use); POF (Polymer in formulation); USES
(Uses)
(pos. electrode for lithium
sulfur battery and preparation method thereof)
RN 9003-55-8 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)

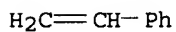
CM 1

CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8



RN 9004-32-4 HCAPLUS
CN Cellulose, carboxymethyl ether, sodium salt (8CI, 9CI) (CA INDEX
NAME)

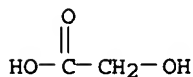
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 79-14-1
CMF C2 H4 O3



IC ICM H01M004-60

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **pos electrode lithium sulfur**
battery cathode organo sulfur rubber;
butadiene rubber polysaccharidefluoropolymer blend
binder conductive carbon electrode

IT **Fluoropolymers**, uses
Polysaccharides, uses
RL: DEV (Device component use); POF (Polymer in formulation); USES
(Uses)
(binder; **pos. electrode** for lithium
sulfur battery and preparation method thereof)

IT Synthetic rubber, uses
RL: DEV (Device component use); POF (Polymer in formulation); USES
(Uses)
(butadiene copolymers, binder; **pos**
. electrode for lithium sulfur
battery and preparation method thereof)

IT Secondary batteries
(lithium; **pos. electrode** for
lithium sulfur battery and preparation
method thereof)

IT **Battery cathodes**
Composites
Conducting polymers
(**pos. electrode** for lithium
sulfur battery and preparation method thereof)

IT Organic compounds, uses
RL: DEV (Device component use); USES (Uses)
(sulfur-containing; **pos. electrode**
for **lithium sulfur battery** and
preparation method thereof)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(elec. conductive; **pos. electrode** for
lithium sulfur battery and preparation
method thereof)

IT 7704-34-9D, Sulfur, compds.
RL: DEV (Device component use); USES (Uses)
(**pos. electrode** for lithium
sulfur battery and preparation method thereof)

IT 9003-55-8, Styrene-butadiene
copolymer 9004-32-4
RL: DEV (Device component use); POF (Polymer in formulation); USES
(Uses)
(**pos. electrode** for lithium
sulfur battery and preparation method thereof)

L145 ANSWER 3 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:430505 HCAPLUS <<LOGINID::20060323>>
DOCUMENT NUMBER: 140:426098
TITLE: **Cathode for lithium-**
sulfur battery
INVENTOR(S): Hwang, Duck-chul
PATENT ASSIGNEE(S): S. Korea
SOURCE: U.S. Pat. Appl. Publ., 18 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	

US 2004101753	A1	20040527	US 2003-719614	2003 1121
JP 2004179160	A2	20040624	JP 2003-386584	2003 1117
CN 1503385	A	20040609	CN 2003-10117953	2003 1126
PRIORITY APPLN. INFO.:			KR 2002-73961	A 2002 1126
			KR 2003-3978	A 2003 0121

AB Disclosed is a pos. electrode for a lithium-sulfur battery including a pos. active material selected from elemental sulfur (S8), a sulfur-based compound and mixts. thereof; a conductive material; a binder; and an inorg. additive with a particle size (v, 50%) of 5000 nm or less and having insoly. to an electrolyte.

IT 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, compound
 RL: DEV (Device component use); USES (Uses)
 (cathode for lithium-sulfur battery)

RN 7704-34-9 HCAPLUS.

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9002-89-5, Polyvinyl alcohol 9003-39-8, Polyvinylpyrrolidone 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, PvdF 25322-68-3, Peo
 RL: TEM (Technical or engineered material use); USES (Uses)
 (coating; cathode for lithium-sulfur battery)

RN 9002-89-5 HCAPLUS

CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 557-75-5

CMF C2 H4 O

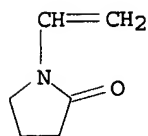
H₂C=CH-OH

RN 9003-39-8 HCAPLUS

CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

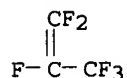
CRN 88-12-0
CMF C6 H9 N O



RN 9011-17-0 HCAPLUS
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

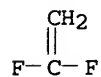
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

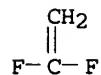
CRN 75-38-7
CMF C2 H2 F2



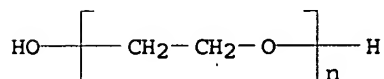
RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)

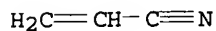


IT 9003-18-3
RL: TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, coating; cathode for lithium
-sulfur battery)

RN 9003-18-3 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

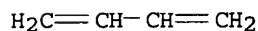
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 106-99-0
CMF C4 H6

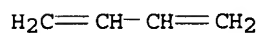


IT 106107-54-4 694491-73-1
RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, hydrogenated,
block, triblock, sulfonated, coating; cathode for
lithium-sulfur battery)

RN 106107-54-4 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene, block (9CI) (CA INDEX NAME)

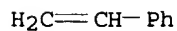
CM 1

CRN 106-99-0
CMF C4 H6



CM 2

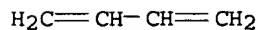
CRN 100-42-5
CMF C8 H8



RN 694491-73-1 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8

$\text{H}_2\text{C}=\text{CH}-\text{Ph}$

IC ICM H01M004-58
ICS H01M002-16; H01M004-62
INCL 429218100; 429217000; 429137000; 429231950; 429232000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **cathode lithium sulfur battery**
IT **Battery cathodes**
Ionic conductivity
Surface roughness
(cathode for lithium-sulfur battery)
IT Oxides (inorganic), uses
Sulfides, uses
RL: MOA (Modifier or additive use); USES (Uses)
(cathode for lithium-sulfur battery)
IT **Fluoropolymers**, uses
Nitrile rubber, uses
Polyolefins
Polyoxyalkylenes, uses
Polyurethanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; cathode for lithium-sulfur battery)
IT **Styrene-butadiene rubber**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrogenated, block, triblock, sulfonated, coating; cathode for lithium-sulfur battery)
IT **Secondary batteries**
(lithium; cathode for lithium-sulfur battery)
IT 7429-90-5, Aluminum, uses 7440-44-0D, Carbon, **sulfur** compound, polymer **7704-34-9, Sulfur**, uses 7704-34-9D, **Sulfur**, carbon compound, polymer **7704-34-9D, Sulfur**, compound 74432-42-1, Lithium polysulfide 90076-65-6
RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur battery)
IT 1314-23-4, Zirconium oxide, uses 1314-62-1, Vanadium oxide (V2O5), uses 1344-28-1, Aluminum oxide, uses 11099-11-9, Vanadium oxide 12039-13-3, Titanium sulfide (TiS2) 13463-67-7, Titanium oxide, uses
RL: MOA (Modifier or additive use); USES (Uses)
(cathode for lithium-sulfur battery)
IT 1317-37-9, Iron sulfide FeS 1332-29-2, Tin oxide 7440-44-0, Carbon, uses 9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether 9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl chloride copolymer **9003-39-8**, Polyvinylpyrrolidone 9004-35-7, Cellulose acetate 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer 12022-71-8, Iron titanium oxide FeTiO_3 12047-27-7, Barium titanium oxide BaTiO_3 , uses **24937-79-9, PvdF** 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate-1-vinyl-2-

pyrrolidone copolymer 25322-68-3, Peo 27360-07-2,
 Vinyl alcohol, polymer with vinyl acetate and vinyl butyral
 49717-87-5, 2-Propenoic acid, ion(1-) homopolymer, uses
 49717-97-7, 2-Propenoic acid, 2-methyl-, ion(1-) homopolymer, uses
 RL: TEM (Technical or engineered material use); USES (Uses)

(coating; cathode for lithium-
 sulfur battery)

IT 7631-86-9, Colloidal silica, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (colloidal, coating; cathode for lithium-
 sulfur battery)

IT 9003-18-3
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nitrile rubber, coating; cathode for lithium
 -sulfur battery)

IT 106107-54-4 694491-73-1
 RL: TEM (Technical or engineered material use); USES (Uses)
 (styrene-butadiene rubber, hydrogenated,
 block, triblock, sulfonated, coating; cathode for
 lithium-sulfur battery)

L145 ANSWER 4 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:392153 HCAPLUS <<LOGINID::20060323>>
 DOCUMENT NUMBER: 140:378108
 TITLE: Cathode for lithium
 sulfur battery
 INVENTOR(S): Hwang, Duck-chul
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 13 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2004091776	A1	20040513	US 2003-693925	2003 1028
JP 2004152743	A2	20040527	JP 2003-274979	2003 0715
CN 1499659	A	20040526	CN 2003-10115679	2003 1028
PRIORITY APPLN. INFO.:		KR 2002-65775	A	2002 1028

AB A pos. electrode for a lithium
 sulfur battery and a lithium
 sulfur battery include a pos. active material
 with a particle size (v, 50%) of 10.mu.m or
 less, or has an average surface roughness of 5.mu.m
 . The pos. active material is selected from elemental sulfur, a
 sulfur-based compound, and a mixture thereof.

IT 9003-56-9
 RL: TEM (Technical or engineered material use); USES (Uses)
 (abs rubber, coatings; cathode for lithium
 sulfur battery)

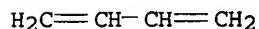
RN 9003-56-9 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
 (9CI) (CA INDEX NAME)

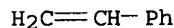
CM 1

CRN 107-13-1
CMF C3 H3 N

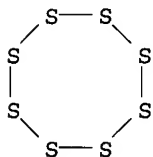
CM 2

CRN 106-99-0
CMF C4 H6

CM 3

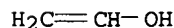
CRN 100-42-5
CMF C8 H8

IT 10544-50-0, Sulfur s8, uses
RL: DEV (Device component use); USES (Uses)
(cathode for lithium sulfur
battery)
RN 10544-50-0 HCAPLUS
CN Sulfur, mol. (S8) (7CI, 8CI, 9CI) (CA INDEX NAME)



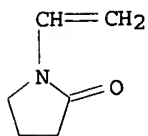
IT 9002-89-5, Polyvinyl alcohol 9003-39-8,
Polyvinyl pyrrolidone 9011-17-0, Hexafluoropropylene-
vinylidene fluoride copolymer 24937-79-9, Polyvinylidene
fluoride 25322-68-3, Peo
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; cathode for lithium
sulfur battery)
RN 9002-89-5 HCAPLUS
CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

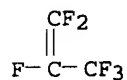
CRN 557-75-5
CMF C2 H4 O

RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

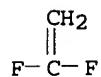
CM 1

CRN 88-12-0
CMF C6 H9 N ORN 9011-17-0 HCAPLUS
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

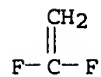
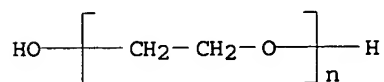
CM 1

CRN 116-15-4
CMF C3 F6

CM 2

CRN 75-38-7
CMF C2 H2 F2RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)

IT 9003-18-3

RL: TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, coatings; **cathode for
lithium sulfur battery**)

RN 9003-18-3 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)

CM 1

CRN 107-13-1

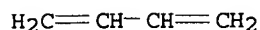
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 9003-55-8

RL: TEM (Technical or engineered material use); USES (Uses)
(**styrene-butadiene** rubber, coatings;
**cathode for lithium sulfur
battery**)

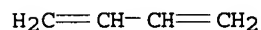
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)

CM 1

CRN 106-99-0

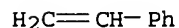
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-58

ICS B05D003-02; H01M002-16

INCL 429218100; 429137000; 427372200

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **cathode lithium sulfur
battery**

IT Synthetic rubber, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(butene-ethylene-styrene, block, triblock, sulfonated,
coatings; **cathode for lithium
sulfur battery**)

IT **Battery cathodes**
Coating materials
(cathode for lithium sulfur battery)

IT **ABS rubber**
Fluoropolymers, uses
Nitrile rubber, uses
Polymers, uses
Polyolefins
Polyoxyalkylenes, uses
Polyurethanes, uses
Styrene-butadiene rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; cathode for lithium sulfur battery)

IT **Materials**
(inorg., coatings; cathode for lithium sulfur battery)

IT **Secondary batteries**
(lithium; cathode for lithium sulfur battery)

IT **Lithium alloy, base**
RL: DEV (Device component use); USES (Uses)
(cathode for lithium sulfur battery)

IT **7429-90-5, Aluminum, uses**
RL: DEV (Device component use); USES (Uses)
(C-coated; cathode for lithium sulfur battery)

IT **9003-56-9**
RL: TEM (Technical or engineered material use); USES (Uses)
(abs rubber, coatings; cathode for lithium sulfur battery)

IT **7439-93-2, Lithium, uses 7440-44-0D, Carbon, sulfur compound, polymer 7704-34-9D, Sulfur, carbon compound, polymer 10544-50-0, Sulfur s8, uses 74432-42-1, Lithium polysulfide**
RL: DEV (Device component use); USES (Uses)
(cathode for lithium sulfur battery)

IT **1314-23-4, Zirconium oxide, uses 1332-29-2, Tin oxide 1332-37-2, Iron oxide, uses 7440-44-0, Carbon, uses 9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether 9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl chloride copolymer 9003-39-8, Polyvinyl pyrrolidone 9004-35-7, Cellulose acetate 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 11099-11-9, Vanadium oxide 11126-12-8, Iron sulfide 12047-27-7, Barium titanate, uses 12789-64-9, Iron titanate 13463-67-7, Titanium oxide, uses 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate/vinylpyrrolidone copolymer 25322-68-3, Peo 27360-07-2, Vinyl alcohol, polymer with vinyl acetate and vinyl butyral 49717-87-5, 2-Propenoic acid, ion(1-) homopolymer, uses**
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; cathode for lithium sulfur battery)

IT **1344-28-1, Alumina, uses 7631-86-9, Colloidal silica, uses**
RL: TEM (Technical or engineered material use); USES (Uses)
(colloidal, coatings; cathode for lithium sulfur battery)

IT **9003-18-3**
RL: TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, coatings; cathode for lithium sulfur battery)

IT 9003-55-8

RL: TEM (Technical or engineered material use); USES (Uses)
 (styrene-butadiene rubber, coatings;
 cathode for lithium sulfur
 battery)

L145 ANSWER 5 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:252060 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 140:256345

TITLE: Fabrication of **cathode** active
 material of **alithium-sulfur**
battery

INVENTOR(S): Choi, Soo-Seok; Choi, Yun-Suk; Han, Ji-Seong;
 Park, Seung-Hee; Jung, Yong-Ju; Lee, Il-Young

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 25 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2004058246	A1	20040325	US 2003-405237	2003 0403
EP 1427039	A2	20040609	EP 2003-7388	2003 0402
EP 1427039	A3	20051221		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CN 1485941	A	20040331	CN 2003-123313	2003 0425
JP 2004119367	A2	20040415	JP 2003-176947	2003 0620
PRIORITY APPLN. INFO.:			KR 2002-57576	A 2002 0923

AB A pos. active material of **alithium-sulfur**
battery includes a **sulfur-conductive**
agent-agglomerated complex in which a **conductive**
agent particle is attached onto a surface of a sulfur
 particle having an average particle size less than or equal to 7 .
 mu.m. The **sulfur-conductive**
agent-agglomerated complex is manufactured by mixing a sulfur
 powder and a **conductive agent** powder to form a
 mixture, and milling the mixture

IT 9002-89-5, Polyvinyl alcohol 9003-39-8,
 Polyvinyl pyrrolidone 25322-68-3, Peo
 25322-68-3D, Peo, alkylated
 RL: MOA (Modifier or additive use); USES (Uses)
 (fabrication of **cathode** active material of
lithium-sulfur battery)

RN 9002-89-5 HCAPLUS

CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 557-75-5

CMF C2 H4 O



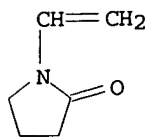
RN 9003-39-8 HCAPLUS

CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

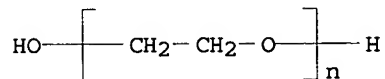
CM 1

CRN 88-12-0

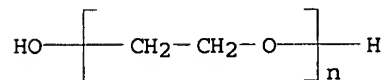
CMF C6 H9 N O



RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)

IC ICM H01M004-62

ICS H01M004-58

INCL 429232000; 429218100; 252182100; 429217000; 429231950

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **cathode active material lithium sulfur
battery**

IT Polyoxyalkylenes, uses

RL: MOA (Modifier or additive use); USES (Uses)

(alkylated; fabrication of **cathode active material of
lithium-sulfur battery**)

IT Cork

Pitch

(carbon precursor; fabrication of **cathode active
material of lithium-sulfur battery**
)

IT Nanotubes

(carbon; fabrication of **cathode active material of
lithium-sulfur battery**)

IT Telephones

(cellular; fabrication of **cathode active material of
lithium-sulfur battery**)

IT Clocks

(digital; fabrication of **cathode active material of
lithium-sulfur battery**)

IT Toys
(electronic; fabrication of **cathode** active material of **lithium-sulfur battery**)

IT Battery **cathodes**
(fabrication of **cathode** active material of **lithium-sulfur battery**)

IT Carbon black, uses
Carbon fibers, uses
Fluoropolymers, uses
Group IIIA elements
Group IVA elements
Polymer blends
Polyoxyalkylenes, uses
Transition metals, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fabrication of **cathode** active material of **lithium-sulfur battery**)

IT Secondary batteries
(lithium; fabrication of **cathode** active material of **lithium-sulfur battery**)

IT Computers
Television
(portable; fabrication of **cathode** active material of **lithium-sulfur battery**)

IT Metals, uses
RL: MOA (Modifier or additive use); USES (Uses)
(powder; fabrication of **cathode** active material of **lithium-sulfur battery**)

IT Polyacetylenes, uses
Polyanilines
RL: TEM (Technical or engineered material use); USES (Uses)
(protective layer; fabrication of **cathode** active material of **lithium-sulfur battery**)

IT Acoustic devices
(radios, two-way; fabrication of **cathode** active material of **lithium-sulfur battery**)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(fabrication of **cathode** active material of **lithium-sulfur battery**)

IT 7439-93-2, Lithium, uses 7704-34-9, **Sulfur**, uses
11102-77-5 12798-95-7 18282-10-5, Tin dioxide 22465-17-4,
Titanium nitrate 51398-14-2 51401-38-8 51401-52-6
51401-53-7 53680-59-4 58504-18-0 70246-24-1 77194-67-3
77194-68-4 77194-69-5 97686-54-9
RL: DEV (Device component use); USES (Uses)
(fabrication of **cathode** active material of **lithium-sulfur battery**)

IT 7439-88-5, Iridium, uses 7439-92-1, Lead, uses 7439-97-6,
Mercury, uses 7439-98-7, Molybdenum, uses 7440-03-1, Niobium,
uses 7440-04-2, Osmium, uses 7440-05-3, Palladium, uses
7440-06-4, Platinum, uses 7440-15-5, Rhenium, uses 7440-16-6,
Rhodium, uses 7440-18-8, Ruthenium, uses 7440-21-3, Silicon,
uses 7440-22-4, Silver, uses 7440-25-7, Tantalum, uses
7440-26-8, Technetium, uses 7440-31-5, Tin, uses 7440-33-7,
Tungsten, uses 7440-43-9, Cadmium, uses 7440-56-4, Germanium,
uses 7440-57-5, Gold, uses 7440-65-5, Yttrium, uses
7440-67-7, Zirconium, uses 7704-34-9D, **Sulfur**, compound
7782-42-5, Graphite, uses 9002-84-0, Ptfе 9002-86-2, Polyvinyl
chloride 9002-89-5, Polyvinyl alcohol 9003-19-4,
Polyvinyl ether 9003-20-7, Polyvinyl acetate 9003-32-1,
Polyethyl acrylate 9003-39-8, Polyvinyl pyrrolidone
9003-47-8, Polyvinylpyridine 9003-53-6, Polystyrene 9011-14-7,
Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride

copolymer 13463-67-7, Titanium oxide, uses 15578-32-2,
 Stannous phosphate 24937-79-9, PvdF 25014-41-9,
 Polyacrylonitrile 25322-68-3, PEO 25322-68-3D,
 PEO, alkylated 58799-80-7, Cobalt lanthanum strontium oxide
 colasro3 141067-82-5, Lanthanum manganese strontium oxide
 lamnsro3

RL: MOA (Modifier or additive use); USES (Uses)

(fabrication of **cathode** active material of
lithium-sulfur battery)

IT 7440-44-0, Carbon, uses

RL: MOA (Modifier or additive use); USES (Uses)

(nanotubes; fabrication of **cathode** active material of
lithium-sulfur battery)

IT 7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-96-5,
 Manganese, uses 7440-02-0, Nickel, uses 7440-20-2, Scandium,
 uses 7440-32-6, Titanium, uses 7440-47-3, Chromium, uses
 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-62-2,
 Vanadium, uses 7440-66-6, Zinc, uses

RL: MOA (Modifier or additive use); USES (Uses)

(powder; fabrication of **cathode** active material of
lithium-sulfur battery)

IT 7439-95-4, Magnesium, uses 7440-42-8, Boron, uses 7440-55-3,
 Gallium, uses 7440-70-2, Calcium, uses 10377-52-3, Lithium
 phosphate 12627-14-4, Lithium silicate 12676-27-6
 25067-58-7, Polyacetylene 25190-62-9, Poly(p-phenylene)
 25233-30-1, Polyaniline 25233-34-5, Polythiophene 26009-24-5,
 Poly(p-phenylene vinylene) 28774-98-3, Poly(naphthalene-2,6-
 diyl) 30604-81-0, Polypyrrole 114239-80-4,
 Poly(perinaphthalene) 236388-73-1, Lithium silicide sulfide
 236388-74-2, Lithium boride sulfide 236388-75-3, Aluminum
 lithium sulfide 355408-23-0, Lithium nitride phosphide

RL: TEM (Technical or engineered material use); USES (Uses)

(protective layer; fabrication of **cathode** active
 material of **lithium-sulfur battery**)

)

L145 ANSWER 6 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:203426 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 140:238424

TITLE: **Positive electrode for
 lithium-sulfur
 battery and lithium-
 sulfur battery and article**

INVENTOR(S): Jung, Yongju; Kim, Seok; Choi, Yunsuk

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004048154	A1	20040311	US 2003-370772	2003 0224
EP 1443585	A2	20040804	EP 2003-4207	2003 0225
EP 1443585	A3	20040811		
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK			

JP 2004103548 A2 20040402 JP 2003-62292

2003
0307

CN 1482693 A 20040317 CN 2003-120576

2003
0314

PRIORITY APPLN. INFO.:

KR 2002-54951 A

2002
0911

AB A pos. electrode for a lithium-sulfur battery and a lithium-sulfur battery including the same have a pos. electrode that includes a pos. active material, a conductor, an organic binder, and an additive. The pos. active material includes at least one selected from elemental sulfur, a sulfur-based compound, or a mixture thereof. The additive includes a polymer having at least one amino nitrogen group in main chains or side chains.

IT 7704-34-9, Sulfur, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Polyvinylidene fluoride

RL: DEV (Device component use); USES (Uses)

(pos. electrode for lithium-sulfur battery and lithium-sulfur battery and article of manufacture including same)

RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

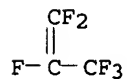
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4

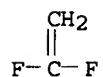
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2

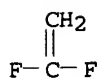


RN 24937-79-9 HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

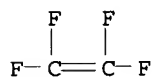
CRN 75-38-7
CMF C2 H2 F2



IT 9002-84-0, Polytetrafluoroethylene 9003-01-4,
Polyacrylic acid 9003-17-2, Polybutadiene
9003-39-8, Polyvinyl pyrrolidone 26913-06-4,
Poly[imino(1,2-ethanediyl)]
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(pos. electrode for lithium-
sulfur battery and lithium-
sulfur battery and article of manufacture
including same)
RN 9002-84-0 HCAPLUS
CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

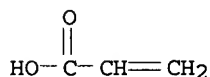
CRN 116-14-3
CMF C2 F4



RN 9003-01-4 HCAPLUS
CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)

CM 1

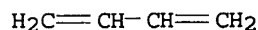
CRN 79-10-7
CMF C3 H4 O2



RN 9003-17-2 HCAPLUS
CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

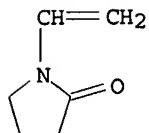
CRN 106-99-0
CMF C4 H6



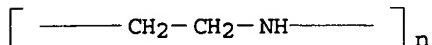
RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 88-12-0
CMF C6 H9 N O



RN 26913-06-4 HCAPLUS
 CN Poly[imino(1,2-ethanediyl)] (9CI) (CA INDEX NAME)



IC ICM H01M004-58
 ICS H01M004-62
 INCL 429212000; 429218100; 429217000; 429231950
 CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST **pos electrode lithium sulfur**
battery article manuf including same
 IT Secondary batteries
 (lithium; **pos. electrode** for
lithium-sulfur battery and
lithium-sulfur battery and article
 of manufacture including same)
 IT Battery electrodes
 Binders
 Secondary batteries
 (**pos. electrode** for lithium-
sulfur battery and lithium-
sulfur battery and article of manufacture
 including same)
 IT Fluoropolymers, uses
 Polyamides, uses
 Polyesters, uses
 RL: DEV (Device component use); TEM (Technical or engineered
 material use); USES (Uses)
 (**pos. electrode** for lithium-
sulfur battery and lithium-
sulfur battery and article of manufacture
 including same)
 IT 7439-93-2, Lithium, uses 7704-34-9, Sulfur,
 uses 9011-14-7, Poly(methyl methacrylate) 9011-17-0,
 Hexafluoropropylene-vinylidene fluoride copolymer 12136-58-2,
 Lithium sulfide 24937-79-9, Polyvinylidene fluoride
 RL: DEV (Device component use); USES (Uses)
 (**pos. electrode** for lithium-
sulfur battery and lithium-
sulfur battery and article of manufacture
 including same)
 IT 110-71-4 111-96-6, Diglyme 646-06-0, Dioxolane
 9002-84-0, Polytetrafluoroethylene 9002-86-2, Polyvinyl
 chloride 9003-01-4, Polyacrylic acid 9003-17-2
 , Polybutadiene 9003-31-0, Polyisoprene 9003-32-1, Polyethyl
 acrylate 9003-39-8, Polyvinyl pyrrolidone 25014-41-9,
 Polyacrylonitrile 25038-54-4, Polycaprolactam, uses
 25038-59-9, Polyethylene terephthalate, uses 26913-06-4,
 Poly[imino(1,2-ethanediyl)] 90076-65-6
 RL: DEV (Device component use); TEM (Technical or engineered
 material use); USES (Uses)
 (**pos. electrode** for lithium-
sulfur battery and lithium-
sulfur battery and article of manufacture

including same)

L145 ANSWER 7 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:119840 HCAPLUS <<LOGINID::20060323>>
 DOCUMENT NUMBER: 140:149223
 TITLE: Method for producing **cathode** for
lithium-sulfur
battery
 INVENTOR(S): Hwang, Duck-chul; Park, Zin; Lee, Jae-woan
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 11 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2004029014	A1	20040212	US 2003-634748	2003 0806
JP 2004071566	A2	20040304	JP 2003-283959	2003 0731
CN 1495937	A	20040512	CN 2003-127272	2003 0807
PRIORITY APPLN. INFO.:		KR 2002-46581	A	2002 0807

AB The invention concerns a **pos. electrode** of a
lithium-sulfur battery, a method of
 producing the same, and a **lithium-sulfur**
battery include, as the **pos. electrode**
 , a current collector, a pos. active material layer on the current
 collector, and a polymer layer on the pos. active material on the
 current collector.

IT 9003-56-9
 RL: DEV (Device component use); USES (Uses)
 (abs rubber, method for producing **cathode** for
lithium-sulfur battery)

RN 9003-56-9 HCAPLUS
 CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
 (9CI) (CA INDEX NAME)

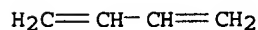
CM 1

CRN 107-13-1
 CMF C3 H3 N



CM 2

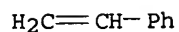
CRN 106-99-0
 CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8

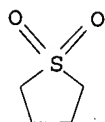


IT 126-33-0, Sulfolane 9002-89-5, Polyvinyl alcohol
9003-39-8, Polyvinylpyrrolidone 9011-17-0,
Hexafluoropropylene-vinylidene fluoride copolymer
24937-79-9, PvdF 25322-68-3, Peo
33454-82-9, Lithium triflate

RL: DEV (Device component use); USES (Uses)
(method for producing cathode for lithium-
sulfur battery)

RN 126-33-0 HCAPLUS

CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



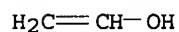
RN 9002-89-5 HCAPLUS

CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 557-75-5

CMF C2 H4 O



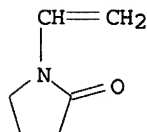
RN 9003-39-8 HCAPLUS

CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 88-12-0

CMF C6 H9 N O



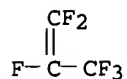
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

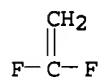
CRN 116-15-4

CMF C3 F6



CM 2

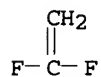
CRN 75-38-7
CMF C2 H2 F2



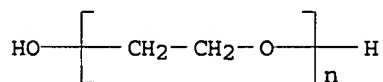
RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

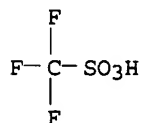
CRN 75-38-7
CMF C2 H2 F2



RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)



RN 33454-82-9 HCAPLUS
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)

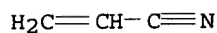


● Li

IT 9003-18-3
RL: DEV (Device component use); USES (Uses)
(nitrile rubber, method for producing cathode for
lithium-sulfur battery)
RN 9003-18-3 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

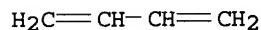
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 106-99-0
CMF C4 H6



IT 106107-54-4 694491-73-1

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, hydrogenated,
block, triblock, sulfonated; method for producing
cathode for lithium-sulfur
battery)

RN 106107-54-4 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, block (9CI) (CA
INDEX NAME)

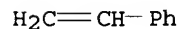
CM 1

CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8

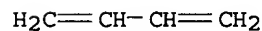


RN 694491-73-1 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA
INDEX NAME)

CM 1

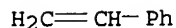
CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, method for
producing cathode for lithium-
sulfur battery)

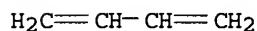
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)

CM 1

CRN 106-99-0

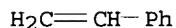
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M002-16

ICS H01M004-60; H01M004-58

INCL 429246000; 429251000; 429252000; 429218100; 429213000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST cathode lithium sulfur
battery

IT Polyurethanes, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(acrylates, ethoxylated; method for producing cathode
for lithium-sulfur battery)

IT Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)
(hydrogenated, block, triblock, sulfonated; method for
producing cathode for lithium-
sulfur battery)

IT Primary batteries

(lithium; method for producing cathode for
lithium-sulfur battery)

IT Battery cathodes

(method for producing cathode for lithium-
sulfur battery)

IT ABS rubber

Fluoropolymers, uses

Nitrile rubber, uses

Polyolefins

Polyoxyalkylenes, uses

Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)
(method for producing cathode for lithium-
sulfur battery)

IT Lithium alloy, base

RL: DEV (Device component use); USES (Uses)
 (method for producingcathode for lithium-sulfur battery)

IT 9003-56-9
 RL: DEV (Device component use); USES (Uses)
 (abs rubber, method for producingcathode for lithium-sulfur battery)

IT 1344-28-1, Alumina, uses 7631-86-9, Colloidal silica, uses
 RL: DEV (Device component use); USES (Uses)
 (colloidal; method for producingcathode for lithium-sulfur battery)

IT 10344-93-1D, Acrylate, alkyl derivative
 RL: TEM (Technical or engineered material use); USES (Uses)
 (ethoxylated; method for producingcathode for lithium-sulfur battery)

IT 110-71-4 111-96-6, Diglyme126-33-0, Sulfolane
 646-06-0, 1,3-Dioxolane 1314-23-4, Zirconium oxide, uses
 1332-29-2, Tin oxide 1332-37-2, Iron oxide, uses 7439-93-2,
 Lithium, uses 7440-44-0, Carbon, uses 7704-34-9, Sulfur, uses
 7704-34-9D, Sulfur, organic compound 7791-03-9, Lithium perchlorate
 9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether
 9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl
 chloride copolymer 9003-39-8, Polyvinylpyrrolidone
 9004-35-7, Cellulose acetate 9010-88-2, Ethyl
 acrylate-methylmethacrylate copolymer9011-17-0,
 Hexafluoropropylene-vinylidene fluoride copolymer 11075-35-7,
 Vanadium titanium oxide 11099-11-9, Vanadium oxide 11126-12-8,
 Iron sulfide 12673-92-6, Titanium sulfide 12789-64-9, Iron
 titanate 13463-67-7, Titanium oxide, uses 14283-07-9, Lithium
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
 24937-79-9, PvdF 25014-41-9, Polyacrylonitrile
 25086-89-9, Vinyl acetate-vinylpyrrolidone copolymer
 25322-68-3, Peo 27360-07-2, Vinyl acetate-vinyl
 alcohol-divinyl butyral copolymer 29935-35-1, Lithium
 hexafluoroarsenate 33454-82-9, Lithium triflate
 49717-87-5, 2-Propenoic acid, ion(1-) homopolymer, uses
 49717-97-7, 2-Propenoic acid, 2-methyl-, ion(1-) homopolymer, uses
 69822-67-9, Poly(carbon sulfide) 90076-65-6, Lithium
 bis(trifluoromethylsulfonyl)imide
 RL: DEV (Device component use); USES (Uses)
 (method for producingcathode for lithium-sulfur battery)

IT 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-24-6,
 Strontium, uses 7440-28-0, Thallium, uses 7440-36-0, Antimony,
 uses 7440-38-2, Arsenic, uses 7440-56-4, Germanium, uses
 7440-69-9, Bismuth, uses 7440-70-2, Calcium, uses 7440-74-6,
 Indium, uses 7553-56-2, Iodine, uses 7726-95-6, Bromine, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (method for producingcathode for lithium-sulfur battery)

IT 9003-18-3
 RL: DEV (Device component use); USES (Uses)
 (nitrile rubber, method for producingcathode for lithium-sulfur battery)

IT 64401-02-1 84170-28-5
 RL: TEM (Technical or engineered material use); USES (Uses)
 (protective coating containing; method for producingcathode for lithium-sulfur battery)

IT 7429-90-5, Aluminum, uses 7440-39-3, Barium, uses 7440-42-8,
 Boron, uses 7723-14-0, Phosphorus, uses 7727-37-9, Nitrogen,
 uses 7782-41-4, Fluorine, uses 7782-44-7, Oxygen, uses
 7782-50-5, Chlorine, uses 26570-48-9, Polyethylene glycol
 diacrylate 52496-08-9, Polypropylene glycol diacrylate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (protective coating; method for producingcathode for

lithium-sulfur battery)
IT 106107-54-4 694491-73-1
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, hydrogenated,
block, triblock, sulfonated; method for producing
cathode for lithium-sulfur
battery)
IT 9003-55-8
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, method for
producing cathode for lithium-
sulfur battery)

L145 ANSWER 8 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:39670 HCAPLUS <<LOGINID::20060323>>
DOCUMENT NUMBER: 140:79840
TITLE: Binder for alithium-sulfur
battery cathode
INVENTOR(S): Kim, Seok; Jung, Yongju; Han, Ji-Seong; Kim,
Jan-Dee
PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
SOURCE: U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2004009399	A1	20040115	US 2003-614870	2003 0709
JP 2004047462	A2	20040212	JP 2003-166410	2003 0611
CN 1471184	A	20040128	CN 2003-145326	2003 0703
PRIORITY APPLN. INFO.:		KR 2002-40006	A	2002 0710

AB Disclosed is a binder for alithium-sulfur
battery including a butadiene-based
copolymer. The binder exhibits chemical resistance to
polysulfides, is stable at battery working temps., forms an
emulsion in organic solvents and exhibits
high adherence to pos. active materials and electrodes used in the
lithium-sulfur battery. The disclosed
binder comps., due to their high adherence to pos. active
materials allow for higher relative amts. of pos. active materials
to be used in the battery resulting in a high capacity
lithium-sulfur battery.

IT 9003-56-9
RL: MOA (Modifier or additive use); USES (Uses)
(abs rubber, binder for lithium-sulfur
battery cathode)
RN 9003-56-9 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)
CM 1
CRN 107-13-1

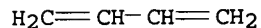
CMF C3 H3 N



CM 2

CRN 106-99-0

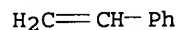
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



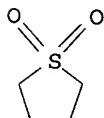
IT 126-33-0, Sulfolane 33454-82-9, Lithium triflate

RL: DEV (Device component use); USES (Uses)

(binder for lithium-sulfur battery
cathode)

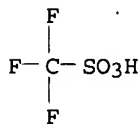
RN 126-33-0 HCAPLUS

CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 9011-17-0 24981-14-4, Ethene, fluoro-homopolymer
25038-71-5, Ethylene-tetrafluoroethylene copolymer

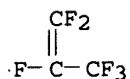
RL: MOA (Modifier or additive use); USES (Uses)

(binder for lithium-sulfur battery
cathode)

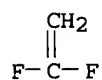
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

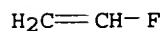
CM 1

CRN 116-15-4
CMF C3 F6

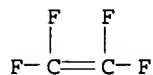
CM 2

CRN 75-38-7
CMF C2 H2 F2RN 24981-14-4 HCAPLUS
CN Ethene, fluoro-, homopolymer (9CI) (CA INDEX NAME)

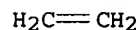
CM 1

CRN 75-02-5
CMF C2 H3 FRN 25038-71-5 HCAPLUS
CN Ethene, tetrafluoro-, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3
CMF C2 F4

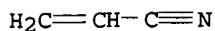
CM 2

CRN 74-85-1
CMF C2 H4IT 9003-18-3
RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, binder for lithium-sulfur
battery cathode)
RN 9003-18-3 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)

CM 1

CRN 107-13-1

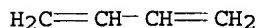
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder for
lithium-sulfur battery
cathode)

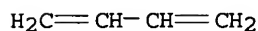
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)

CM 1

CRN 106-99-0

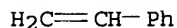
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IT 9002-89-5, Polyvinyl alcohol 9002-98-6

9003-01-4, Polyacrylic acid 9003-05-8,

Polyacrylamide 9003-39-8, Polyvinyl pyrrolidone

9004-32-4, Carboxymethyl cellulose sodium salt

9004-34-6D, Cellulose, derivative 9004-62-0,

Hydroxyethyl cellulose 9004-65-3, Hydroxypropyl Methyl

cellulose 25322-68-3, Peo

RL: MOA (Modifier or additive use); USES (Uses)

(viscosity control agent; binder for

lithium-sulfur battery

cathode)

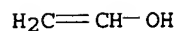
RN 9002-89-5 HCAPLUS

CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 557-75-5

CMF C2 H4 O



RN 9002-98-6 HCAPLUS
CN Aziridine, homopolymer (9CI) (CA INDEX NAME)

CM 1

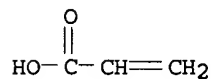
CRN 151-56-4
CMF C2 H5 N



RN 9003-01-4 HCAPLUS
CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)

CM 1

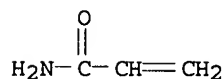
CRN 79-10-7
CMF C3 H4 O2



RN 9003-05-8 HCAPLUS
CN 2-Propenamide, homopolymer (9CI) (CA INDEX NAME)

CM 1

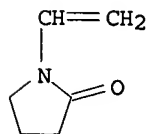
CRN 79-06-1
CMF C3 H5 N O



RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 88-12-0
CMF C6 H9 N O



RN 9004-32-4 HCAPLUS
CN Cellulose, carboxymethyl ether, sodium salt (8CI, 9CI) (CA INDEX NAME)

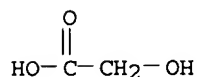
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 79-14-1
CMF C2 H4 O3



RN 9004-34-6 HCAPLUS
CN Cellulose (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9004-62-0 HCAPLUS
CN Cellulose, 2-hydroxyethyl ether (8CI, 9CI) (CA INDEX NAME)

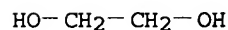
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 107-21-1
CMF C2 H6 O2



RN 9004-65-3 HCAPLUS
CN Cellulose, 2-hydroxypropyl methyl ether (9CI) (CA INDEX NAME)

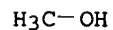
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

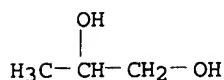
CM 2

CRN 67-56-1
CMF C H4 O

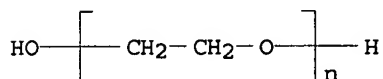


CM 3

CRN 57-55-6
CMF C3 H8 O2



RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)



IC ICM H01M004-62
ICS H01M004-58; C08F036-06; C08F036-14; C08F036-16
INCL 429217000; 429218100; 526291000; 526335000; 526339000; 526340000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium sulfur battery**
cathode binder
IT Adhesion, physical
Battery cathodes
Binders
(binder for lithium-sulfur battery
cathode)
IT ABS rubber
Nitrile rubber, uses
Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(binder for lithium-sulfur battery
cathode)
IT Secondary batteries
(lithium; binder for lithium-sulfur
battery cathode)
IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(viscosity control agent; binder for
lithium-sulfur battery
cathode)
IT 9003-56-9
RL: MOA (Modifier or additive use); USES (Uses)
(abs rubber, binder for lithium-sulfur
battery cathode)
IT 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane
646-06-0, 1,3-Dioxolane 7704-34-9, Sulfur, uses
33454-82-9, Lithium triflate
RL: DEV (Device component use); USES (Uses)
(binder for lithium-sulfur battery
cathode)
IT 116-15-4 9011-17-0 24981-14-4, Ethene,
fluoro-homopolymer 25038-71-5, Ethylene-
tetrafluoroethylene copolymer 156395-51-6
RL: MOA (Modifier or additive use); USES (Uses)
(binder for lithium-sulfur battery
cathode)
IT 9003-18-3
RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, binder for lithium-sulfur
battery cathode)
IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber, binder for
 lithium-sulfur battery
 cathode)

IT 9002-89-5, Polyvinyl alcohol 9002-98-6
 9003-01-4, Polyacrylic acid 9003-05-8,
 Polyacrylamide 9003-39-8, Polyvinyl pyrrolidone
 9004-32-4, Carboxymethyl cellulose sodium salt
 9004-34-6D, Cellulose, derivative 9004-62-0,
 Hydroxyethyl cellulose 9004-65-3, Hydroxypropyl Methyl
 cellulose 9004-67-5, Methyl cellulose 25322-68-3, Peo
 RL: MOA (Modifier or additive use); USES (Uses)
 (viscosity control agent; binder for
 lithium-sulfur battery
 cathode)

L145 ANSWER 9 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:39669 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 140:79839

TITLE: Binder for cathode composition of
 lithium-sulfur
 battery

INVENTOR(S): Kim, Seok; Jung, Yongju; Kim, Jan-Dee; Han,
 Ji-Seong

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

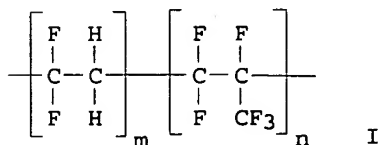
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004009397	A1	20040115	US 2003-431367	2003 0508
CN 1467258	A	20040114	CN 2003-131475	2003 0515
JP 2004047460	A2	20040212	JP 2003-154868	2003 0530
PRIORITY APPLN. INFO.:		KR 2002-40005	A	2002 0710

GI



AB A binder for a lithium-sulfur battery
 utilizes a fluorine-included polymer. The F-included polymer is
 represented by formula (I), where m is 0.5-1 and n is 0-0.5.

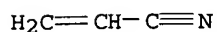
IT 9003-56-9
 RL: MOA (Modifier or additive use); USES (Uses)
 (abs rubber, binder for cathode composition of

lithium-sulfur battery)

RN 9003-56-9 HCAPLUS
 CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
 (9CI) (CA INDEX NAME)

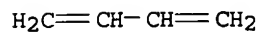
CM 1

CRN 107-13-1
 CMF C3 H3 N



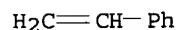
CM 2

CRN 106-99-0
 CMF C4 H6



CM 3

CRN 100-42-5
 CMF C8 H8



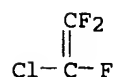
IT 9002-83-9, Ethene, chlorotrifluoro-homopolymer
 9011-17-0, 1,1-Difluoroethylene-hexafluoropropylene
 copolymer 24981-14-4, Ethene, fluoro-homopolymer
 25038-71-5, Ethylene-tetrafluoroethylene copolymer
 25067-11-2, Tetrafluoroethylene-hexafluoropropylene
 copolymer 25101-39-7, Ethylene, chlorotrifluoro-,
 polymer with propene 25101-45-5, Ethylene-
 trifluorochloroethylene copolymer 25120-58-5,
 Fluoroethylene-hexafluoropropylene copolymer 25684-78-0,
 1,1-Difluoroethylene-ethylene copolymer 26008-14-0,
 Ethylene-fluoroethylene copolymer 26794-60-5,
 Fluoroethylene-propylene copolymer 27029-05-6,
 Propylene-tetrafluoroethylene copolymer 30871-57-9,
 1,1-Difluoroethylene-propylene copolymer 51772-72-6,
 Ethylene, chlorotrifluoro-hexafluoropropylene copolymer
 108146-73-2 640266-36-0

RL: MOA (Modifier or additive use); USES (Uses)
 (binder for cathode composition of lithium-
 sulfur battery)

RN 9002-83-9 HCAPLUS
 CN Ethene, chlorotrifluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

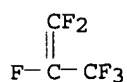
CRN 79-38-9
 CMF C2 Cl F3



RN 9011-17-0 HCAPLUS
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

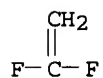
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

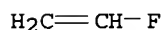
CRN 75-38-7
CMF C2 H2 F2



RN 24981-14-4 HCAPLUS
CN Ethene, fluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

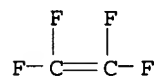
CRN 75-02-5
CMF C2 H3 F



RN 25038-71-5 HCAPLUS
CN Ethene, tetrafluoro-, polymer with ethene (9CI) (CA INDEX NAME)

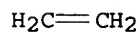
CM 1

CRN 116-14-3
CMF C2 F4



CM 2

CRN 74-85-1
CMF C2 H4



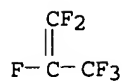
RN 25067-11-2 HCAPLUS
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with tetrafluoroethene

(9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4

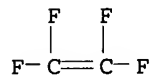
CMF C3 F6



CM 2

CRN 116-14-3

CMF C2 F4



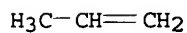
RN 25101-39-7 HCAPLUS

CN 1-Propene, polymer with chlorotrifluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 115-07-1

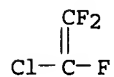
CMF C3 H6



CM 2

CRN 79-38-9

CMF C2 Cl F3



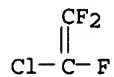
RN 25101-45-5 HCAPLUS

CN Ethene, chlorotrifluoro-, polymer with ethene (9CI) (CA INDEX NAME)

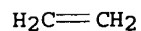
CM 1

CRN 79-38-9

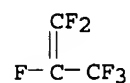
CMF C2 Cl F3



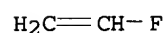
CM 2

CRN 74-85-1
CMF C2 H4RN 25120-58-5 HCAPLUS
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with fluoroethene
(9CI) (CA INDEX NAME)

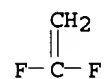
CM 1

CRN 116-15-4
CMF C3 F6

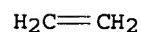
CM 2

CRN 75-02-5
CMF C2 H3 FRN 25684-78-0 HCAPLUS
CN Ethene, 1,1-difluoro-, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

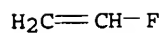
CRN 75-38-7
CMF C2 H2 F2

CM 2

CRN 74-85-1
CMF C2 H4RN 26008-14-0 HCAPLUS
CN Ethene, fluoro-, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

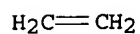
CRN 75-02-5
CMF C2 H3 F



CM 2

CRN 74-85-1

CMF C2 H4



RN 26794-60-5 HCAPLUS

CN 1-Propene, polymer with fluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 115-07-1

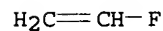
CMF C3 H6



CM 2

CRN 75-02-5

CMF C2 H3 F



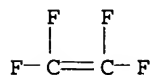
RN 27029-05-6 HCAPLUS

CN 1-Propene, polymer with tetrafluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3

CMF C2 F4



CM 2

CRN 115-07-1

CMF C3 H6



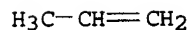
RN 30871-57-9 HCAPLUS

CN 1-Propene, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

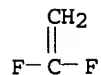
CRN 115-07-1

CMF C3 H6



CM 2

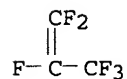
CRN 75-38-7
CMF C2 H2 F2



RN 51772-72-6 HCAPLUS
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with
chlorotrifluoroethene (9CI) (CA INDEX NAME)

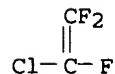
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

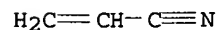
CRN 79-38-9
CMF C2 Cl F3



RN 108146-73-2 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene,
block (9CI) (CA INDEX NAME)

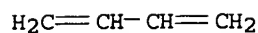
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

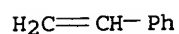
CRN 106-99-0
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



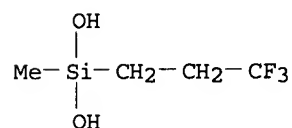
RN 640266-36-0 HCAPLUS

CN Silanediol, methyl(3,3,3-trifluoropropyl)-, polymer with ethene,
block (9CI) (CA INDEX NAME)

CM 1

CRN 660-78-6

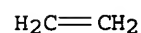
CMF C4 H9 F3 O2 Si



CM 2

CRN 74-85-1

CMF C2 H4



IT 9003-18-3

RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, binder for cathode composition of
lithium-sulfur battery)

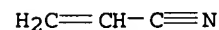
RN 9003-18-3 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)

CM 1

CRN 107-13-1

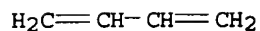
CMF C3 H3 N



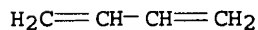
CM 2

CRN 106-99-0

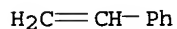
CMF C4 H6



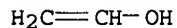
IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder for
cathode composition of lithium-sulfur
battery)
RN 9003-55-8 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)
CM 1
CRN 106-99-0
CMF C4 H6



CM 2
CRN 100-42-5
CMF C8 H8



IT 9002-89-5, Polyvinyl alcohol 9002-98-6
9003-01-4, Polyacrylic acid 9003-05-8,
Polyacrylamide 9003-39-8, Polyvinylpyrrolidone
9004-32-4, Carboxymethyl cellulose sodium salt
9004-62-0, Hydroxyethyl cellulose 9004-65-3,
Hydroxypropyl Methyl cellulose 25322-68-3, Peo
RL: MOA (Modifier or additive use); USES (Uses)
(viscosity control agent; binder for
cathode composition of lithium-sulfur
battery)
RN 9002-89-5 HCAPLUS
CN Ethenol, homopolymer (9CI) (CA INDEX NAME)
CM 1
CRN 557-75-5
CMF C2 H4 O



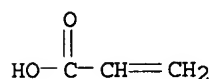
RN 9002-98-6 HCAPLUS
CN Aziridine, homopolymer (9CI) (CA INDEX NAME)
CM 1
CRN 151-56-4
CMF C2 H5 N



RN 9003-01-4 HCAPLUS
CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)

CM 1

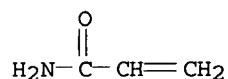
CRN 79-10-7
CMF C3 H4 O2



RN 9003-05-8 HCAPLUS
CN 2-Propenamide, homopolymer (9CI) (CA INDEX NAME)

CM 1

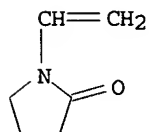
CRN 79-06-1
CMF C3 H5 N O



RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 88-12-0
CMF C6 H9 N O



RN 9004-32-4 HCAPLUS
CN Cellulose, carboxymethyl ether, sodium salt (8CI, 9CI) (CA INDEX NAME)

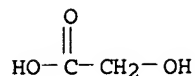
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

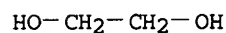
CRN 79-14-1
CMF C2 H4 O3



RN 9004-62-0 HCAPLUS
CN Cellulose, 2-hydroxyethyl ether (8CI, 9CI) (CA INDEX NAME)
CM 1
CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

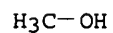
CM 2
CRN 107-21-1
CMF C2 H6 O2



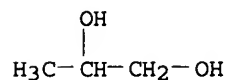
RN 9004-65-3 HCAPLUS
CN Cellulose, 2-hydroxypropyl methyl ether (9CI) (CA INDEX NAME)
CM 1
CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

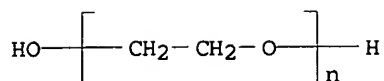
CM 2
CRN 67-56-1
CMF C H4 O



CM 3
CRN 57-55-6
CMF C3 H8 O2



RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)



IC ICM H01M004-62
ICS C08F014-18; C08F114-18
INCL 429217000; 526242000; 526250000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **cathode compn binder lithium sulfur battery**
IT Battery cathodes
Binders
(binder for **cathode** composition of **lithium-sulfur battery**)
IT ABS rubber
Fluoropolymers, uses
Nitrile rubber, uses
Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(binder for **cathode** composition of **lithium-sulfur battery**)
IT Secondary batteries
(lithium; binder for **cathode** composition of **lithium-sulfur battery**)
IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(viscosity control agent; binder for **cathode** composition of **lithium-sulfur battery**)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(C-coated; binder for **cathode** composition of **lithium-sulfur battery**)
IT 9003-56-9
RL: MOA (Modifier or additive use); USES (Uses)
(abs rubber, binder for **cathode** composition of **lithium-sulfur battery**)
IT 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(binder for **cathode** composition of **lithium-sulfur battery**)
IT 9002-83-9, Ethene, chlorotrifluoro-homopolymer
9011-17-0, 1,1-Difluoroethylene-hexafluoropropylene copolymer 24981-14-4, Ethene, fluoro-homopolymer
25038-71-5, Ethylene-tetrafluoroethylene copolymer
25067-11-2, Tetrafluoroethylene-hexafluoropropylene copolymer 25101-39-7, Ethylene, chlorotrifluoro-, polymer with propene 25101-45-5, Ethylene-trifluorochloroethylene copolymer 25120-58-5, Fluoroethylene-hexafluoropropylene copolymer 25684-78-0, 1,1-Difluoroethylene-ethylene copolymer 25791-89-3
26008-14-0, Ethylene-fluoroethylene copolymer
26794-60-5, Fluoroethylene-propylene copolymer
27029-05-6, Propylene-tetrafluoroethylene copolymer
30871-57-9, 1,1-Difluoroethylene-propylene copolymer
51772-72-6, Ethylene, chlorotrifluoro--hexafluoropropylene copolymer 108146-73-2 156395-51-6 640266-36-0 640266-37-1
RL: MOA (Modifier or additive use); USES (Uses)
(binder for **cathode** composition of **lithium-sulfur battery**)
IT 9003-18-3
RL: MOA (Modifier or additive use); USES (Uses)

(nitrile rubber, binder for cathode composition of lithium-sulfur battery)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder for cathode composition of lithium-sulfur battery)

IT 9002-89-5, Polyvinyl alcohol 9002-98-6
9003-01-4, Polyacrylic acid 9003-05-8,
Polyacrylamide 9003-39-8, Polyvinylpyrrolidone
9004-32-4, Carboxymethyl cellulose sodium salt
9004-62-0, Hydroxyethyl cellulose 9004-65-3,
Hydroxypropyl Methyl cellulose 9004-67-5, Methyl cellulose
25322-68-3, Pco

RL: MOA (Modifier or additive use); USES (Uses)
(viscosity control agent; binder for cathode composition of lithium-sulfur battery)

L145 ANSWER 10 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:590669 HCAPLUS <<LOGINID::20060323>>
DOCUMENT NUMBER: 139:120003
TITLE: Cathode for lithium-sulfur battery of high energy density
INVENTOR(S): Han, Ji-Seong; Choi, Su-Suk; Park, Seung-Hee; Choi, Yun-Suk
PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
SOURCE: U.S. Pat. Appl. Publ., 13 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2003143462	A1	20030731	US 2002-310822	2002 1206
KR 2003063060	A	20030728	KR 2002-3625	2002 0122
CN 1434525	A	20030806	CN 2002-158421	2002 1224
JP 2003223897	A2	20030808	JP 2003-9505	2003 0117
PRIORITY APPLN. INFO.:			KR 2002-3625	A 2002 0122

AB A pos. electrode for a lithium-sulfur battery includes a pos. active material including a sulfur-based compound, an elec.conductive material, an agent for increasing viscosity, and a binder. The agent is selected from a cellulose-based compound, an ionically conductive polymer, and a mixture thereof. The binder includes styrene-butadiene rubber.

IT 7704-34-9, Sulfur, uses 7704-34-9D,
Sulfur, compound
RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur battery of high energy d.)

RN 7704-34-9 HCAPLUS
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

RN 7704-34-9 HCAPLUS
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

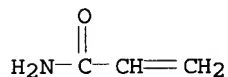
S

IT 9003-05-8, Polyacrylamide 9003-39-8,
Polyvinylpyrrolidone 9004-32-4, Cellulose, carboxymethyl
ether, sodium salt 9004-34-6D, Cellulose, compound
25322-68-3, Peo
RL: MOA (Modifier or additive use); USES (Uses)
(cathode for lithium-sulfur
battery of high energy d.)

RN 9003-05-8 HCAPLUS
CN 2-Propenamide, homopolymer (9CI) (CA INDEX NAME)

CM 1

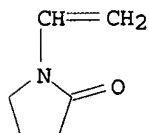
CRN 79-06-1
CMF C3 H5 N O



RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 88-12-0
CMF C6 H9 N O



RN 9004-32-4 HCAPLUS
CN Cellulose, carboxymethyl ether, sodium salt (8CI, 9CI) (CA INDEX NAME)

CM 1

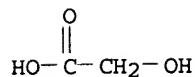
CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 79-14-1

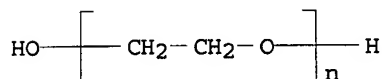
CMF C2 H4 O3



RN 9004-34-6 HCAPLUS
 CN Cellulose (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 25322-68-3 HCAPLUS
 CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
 (CA INDEX NAME)

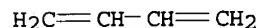


IT 9003-55-8
 RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber, cathode
 for lithium-sulfur battery of
 high energy d.)

RN 9003-55-8 HCAPLUS
 CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
 NAME)

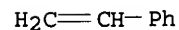
CM 1

CRN 106-99-0
 CMF C4 H6



CM 2

CRN 100-42-5
 CMF C8 H8



IC ICM H01M004-38
 ICS H01M004-62

INCL 429218100; 429217000; 429232000; 429231900

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38

ST lithium sulfur battery
 cathode

IT Synthetic rubber, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (butadiene-ethylene-styrene; cathode for
 lithium-sulfur battery of high
 energy d.)

IT Synthetic rubber, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (butene-ethylene-styrene; cathode for lithium
 -sulfur battery of high energy d.)

- IT **Battery cathodes**
Conducting polymers
(cathode for lithium-sulfur
battery of high energy d.)
- IT Polyoxyalkylenes, uses
Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(cathode for lithium-sulfur
battery of high energy d.)
- IT Primary batteries
(lithium; cathode for lithium-
sulfur battery of high energy d.)
- IT Carbon black, uses
Metals, uses
RL: MOA (Modifier or additive use); USES (Uses)
(powder; cathode for lithium-sulfur
battery of high energy d.)
- IT 7440-44-0, Activated carbon, uses
RL: MOA (Modifier or additive use); USES (Uses)
(activated, powder; cathode for lithium-
sulfur battery of high energy d.)
- IT 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses
7704-34-9, Sulfur, uses 7704-34-9D,
Sulfur, compound
RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur
battery of high energy d.)
- IT 9000-11-7D, Cellulose, carboxymethyl ether, alkali metal salt
9003-05-8, Polyacrylamide 9003-20-7, Polyvinylacetate
9003-39-8, Polyvinylpyrrolidone 9004-32-4,
Cellulose, carboxymethyl ether, sodium salt 9004-34-6D,
Cellulose, compound 9004-64-2D, Hydroxypropylcellulose, alkali
metal salt 9004-67-5D, Methylcellulose, alkali metal salt
9078-35-7, Methylcellulose, sodium salt 9086-60-6, Cellulose,
carboxymethyl ether, ammonium salt 25322-68-3, Peo
26590-05-6, Acrylamide-diallyldimethylammonium chloride copolymer
54848-04-3, Cellulose, carboxymethyl ether, potassium salt
55962-76-0, Cellulose, carboxymethyl ether, lithium salt
104921-80-4, Hydroxypropylcellulose, sodium salt 564455-79-4,
Hydroxypropyl methyl cellulose, ammonium salt 564455-80-7,
Hydroxypropyl cellulose, lithium salt 564455-81-8, Hydroxypropyl
cellulose, potassium salt 564455-82-9 564455-83-0, Methyl
cellulose, potassium salt 564455-84-1, Methyl cellulose,
ammonium salt
RL: MOA (Modifier or additive use); USES (Uses)
(cathode for lithium-sulfur
battery of high energy d.)
- IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, cathode
for lithium-sulfur battery of
high energy d.)

L145 ANSWER 11 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:473082 HCAPLUS <<LOGINID::20060323>>
DOCUMENT NUMBER: 139:24151
TITLE: Preparation of cathode for
lithium sulfur
battery
INVENTOR(S): Choi, Jae-Young; Yoo, Duck-Young; Lee,
Jong-Ki; Kim, Min-Seuk
PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
SOURCE: U.S. Pat. Appl. Publ., 12 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2003113627	A1	20030619	US 2002-259293	2002 0930
US 6908706	B2	20050621		
KR 2003050475	A	20030625	KR 2001-80906	2001 1218
CN 1427491	A	20030702	CN 2002-144424	2002 0927
JP 2003208894	A2	20030725	JP 2002-366929	2002 1218
JP 3677267	B2	20050727		
PRIORITY APPLN. INFO.:			KR 2001-80906	A 2001 1218

AB Provided is a cathode including a current collector, and a cathode active material layer laminated on the current collector, a method of making the cathode, and a battery including the cathode. The cathode active material includes particles having a core-shell structure with a sulfur-containing active material core, a conductor coating disposed on a surface of the active material core, and a binder coating disposed on the conductor coating. A high-performance lithium sulfur battery can be manufactured using the cathode, since sufficient bondability can be attained with only a small amount of a binder.

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Polyvinylidene fluoride 25322-68-3, Peo

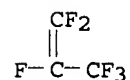
RL: MOA (Modifier or additive use); USES (Uses)
(binder coating; preparation of cathode for lithium sulfur battery)

RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4
CMF C3 F6



CM 2

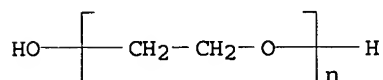
CRN 75-38-7
CMF C2 H2 F2



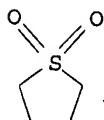
RN 24937-79-9 HCAPLUS
 CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)
 CM 1
 CRN 75-38-7
 CMF C2 H2 F2



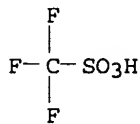
RN 25322-68-3 HCAPLUS
 CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
 (CA INDEX NAME)



IT 126-33-0, Sulfolane 33454-82-9, Lithium triflate
 RL: DEV (Device component use); USES (Uses)
 (preparation of cathode for lithium
 sulfur battery)
 RN 126-33-0 HCAPLUS
 CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 33454-82-9 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



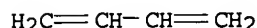
● Li

IT 9003-55-8
 RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber, binder coating;
 preparation of cathode for lithium
 sulfur battery)

RN 9003-55-8 HCAPLUS
 CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

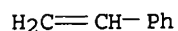
CM 1

CRN 106-99-0
 CMF C4 H6



CM 2

CRN 100-42-5
 CMF C8 H8



IC ICM H01M004-58
 ICS H01M004-62
 INCL 429218100; 429232000; 429217000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST cathode prepn lithium sulfur battery
 IT Fluoropolymers, uses
 Polyoxyalkylenes, uses
 Styrene-butadiene rubber, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (binder coating; preparation of cathode for lithium sulfur battery)
 IT Battery cathodes
 Coating materials
 (preparation of cathode for lithium sulfur battery)
 IT Polysulfides
 RL: DEV (Device component use); USES (Uses)
 (preparation of cathode for lithium sulfur battery)
 IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Polyvinylidene fluoride 25322-68-3, Peo
 RL: MOA (Modifier or additive use); USES (Uses)
 (binder coating; preparation of cathode for lithium sulfur battery)
 IT 7440-44-0, Carbon, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (coating; preparation of cathode for lithium sulfur battery)
 IT 9002-88-4, Polyethylene
 RL: MOA (Modifier or additive use); USES (Uses)
 (high d.; preparation of cathode for lithium sulfur battery)
 IT 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane 646-06-0, Dioxolane 1314-23-4, Zirconium oxide (ZrO2), uses 7429-90-5, Aluminum, uses 7704-34-9, Sulfur, uses 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate
 RL: DEV (Device component use); USES (Uses)
 (preparation of cathode for lithium sulfur battery)
 IT 75-05-8, Acetonitrile, uses 109-99-9, Thf, uses 872-50-4,

n-Methyl-2-pyrrolidone, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; preparation of **cathode** for **lithium sulfur battery**)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(**styrene-butadiene** rubber, binder coating;
preparation of **cathode** for **lithium sulfur battery**)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L145 ANSWER 12 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:300501 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 138:290456

TITLE: Method for preparation of **cathode**
active material composition for
lithium-sulfur battery

INVENTOR(S): Lee, Jea-Woan; Park, Seung-Hee

PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2003073000	A1	20030417	US 2002-156796	2002 0530
KR 2003032364	A	20030426	KR 2001-64096	2001 1017
JP 2003123739	A2	20030425	JP 2002-175642	2002 0617
CN 1412870	A	20030423	CN 2002-125136	2002 0628

PRIORITY APPLN. INFO.: KR 2001-64096 A
2001
1017

AB A pos. active material includes a sulfur compound, a
conductive agent adhered to the sulfur compound,
and a binder including at least one polymer to bind the
conductive agent to the sulfur compound The
sulfur compound comprises one or more compound selected from sulfur,
Li₂Sn (r≥1), organic sulfur compound, and (C₂S_x)_n, where x =
2.5-50, and r≥2.

IT 9003-56-9

RL: MOA (Modifier or additive use); USES (Uses)
(abs rubber, binder; method for preparation of **cathode**
active material composition for **lithium-sulfur battery**)

RN 9003-56-9 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)

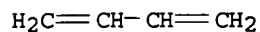
CM 1

CRN 107-13-1
CMF C3 H3 N



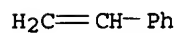
CM 2

CRN 106-99-0
CMF C4 H6



CM 3

CRN 100-42-5
CMF C8 H8

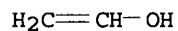


IT 9002-89-5, Polyvinyl alcohol 9003-39-8,
Polyvinylpyrrolidone 24937-79-9, Polyvinylidene fluoride
25322-68-3, Peo
RL: MOA (Modifier or additive use); USES (Uses)
(binder; method for preparation of cathode active material
composition for lithium-sulfur battery
)

RN 9002-89-5 HCAPLUS
CN Ethanol, homopolymer (9CI) (CA INDEX NAME)

CM 1

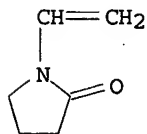
CRN 557-75-5
CMF C2 H4 O



RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

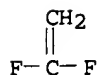
CRN 88-12-0
CMF C6 H9 N O



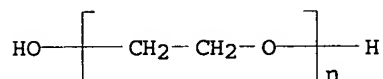
RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)

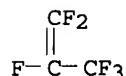


IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride
copolymer
RL: MOA (Modifier or additive use); USES (Uses)
(method for preparation of **cathode** active material composition
for **lithium-sulfur battery**)

RN 9011-17-0 HCAPLUS
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

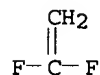
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

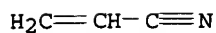
CRN 75-38-7
CMF C2 H2 F2



IT 9003-18-3
RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, binder; method for preparation of **cathode**
active material composition for **lithium-sulfur**
battery)
RN 9003-18-3 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)

CM 1

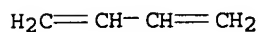
CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)

(styrene-butadiene rubber, binder; method
for preparation of cathode active material composition for
lithium-sulfur battery)

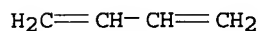
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)

CM 1

CRN 106-99-0

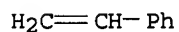
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8

IT 26835-21-2, Butadiene-ethylene-styrene
copolymer

RL: MOA (Modifier or additive use); USES (Uses)

(sulfonated, binder; method for preparation of cathode
active material composition for lithium-sulfur
battery)

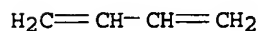
RN 26835-21-2 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene and ethene (9CI)
(CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8

$\text{H}_2\text{C}=\text{CH}-\text{Ph}$

CM 3

CRN 74-85-1

CMF C2 H4

$\text{H}_2\text{C}=\text{CH}_2$

IC ICM H01M004-58
ICS H01M004-62
INCL 429218100; 429232000; 429231950; 429217000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **cathode active material compn lithium sulfur battery**
IT ABS rubber
Fluoropolymers, uses
Nitrile rubber, uses
Polymers, uses
Polyolefins
Polyoxyalkylenes, uses
Polyurethanes, uses
Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(binder; method for preparation of **cathode active material composition for lithium-sulfur battery**)
IT Battery **cathodes**
(method for preparation of **cathode active material composition for lithium-sulfur battery**)
IT Carbon black, uses
RL: MOA (Modifier or additive use); USES (Uses)
(method for preparation of **cathode active material composition for lithium-sulfur battery**)
IT 9003-56-9
RL: MOA (Modifier or additive use); USES (Uses)
(abs rubber, binder; method for preparation of **cathode active material composition for lithium-sulfur battery**)
IT 9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether
9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl chloride copolymer 9003-39-8, Polyvinylpyrrolidone
9004-35-7, Cellulose acetate 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone copolymer 25322-68-3, Peo 27360-07-2 49717-87-5, 2-Propenoic acid, ion(1-) homopolymer, uses 49717-97-7, 2-Propenoic acid, 2-methyl-, ion(1-) homopolymer, uses
RL: MOA (Modifier or additive use); USES (Uses)
(binder; method for preparation of **cathode active material composition for lithium-sulfur battery**)
IT 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, compound 74432-42-1, Lithium polysulfide
RL: DEV (Device component use); USES (Uses)
(method for preparation of **cathode active material composition for lithium-sulfur battery**)
IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride

copolymer
 RL: MOA (Modifier or additive use); USES (Uses)
 (method for preparation of **cathode** active material composition
 for **lithium-sulfur battery**)

IT 67-63-0, Isopropyl alcohol, uses 75-05-8, Acetonitrile, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (method for preparation of **cathode** active material composition
 for **lithium-sulfur battery**)

IT 9003-18-3
 RL: MOA (Modifier or additive use); USES (Uses)
 (nitrile rubber, binder; method for preparation of **cathode**
 active material composition for **lithium-sulfur**
battery)

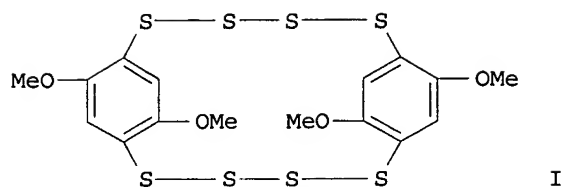
IT 9003-55-8
 RL: MOA (Modifier or additive use); USES (Uses)
 (**styrene-butadiene** rubber, binder; method
 for preparation of **cathode** active material composition for
lithium-sulfur battery)

IT 26835-21-2, Butadiene-ethylene-styrene
copolymer
 RL: MOA (Modifier or additive use); USES (Uses)
 (sulfonated, binder; method for preparation of **cathode**
 active material composition for **lithium-sulfur**
battery)

L145 ANSWER 13 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2002:354007 HCAPLUS <<LOGINID::20060323>>
 DOCUMENT NUMBER: 136:343388
 TITLE: Cathode active material for lithium battery
 INVENTOR(S): Seung, Do-young; Jung, Won-chel; Do,
 Chil-hoon; Moon, Sung-in
 PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 24 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2002055039	A1	20020509	US 2001-888435	2001 0626
US 6866963	B2	20050315		
KR 2002094982	A	20021220	KR 2001-32952	2001 0612
PRIORITY APPLN. INFO.:			KR 2000-52208	A 2000 0904
			KR 2001-32952	A 2001 0612

GI



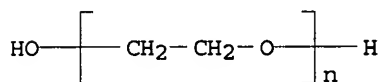
AB A cathode active material and a lithium secondary battery employing the same are provided. The cathode active material includes cyclic bis(2,5-bis-dithio-1,4-dimethoxybenzene) represented by formula (I), a **conductive agent**, and a binder. An anode layer comprises Li or a Li alloy.

IT 25322-68-3, Peo

RL: MOA (Modifier or additive use); USES (Uses)
(binder; cathode active material for lithium battery)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)



IC ICM H01M004-60

ICS H01M004-62; C07C321-00; C07C323-07

INCL 429213000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 35, 38

IT 9002-86-2, Polyvinyl chloride 9004-34-6, Cellulose, uses
9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene
fluoride copolymer 24937-79-9, PvdF 25014-41-9,
Polyacrylonitrile 25213-88-1, Acrylonitrile-methyl
methacrylate-styrene terpolymer 25322-68-3, Peo

RL: MOA (Modifier or additive use); USES (Uses)
(binder; cathode active material for lithium battery)

IT 80-05-7DP, reaction products with sulfur monochloride
2081-08-5DP, reaction products with sulfur monochloride
10025-67-9DP, Sulfur monochloride, reaction products with
bishydroxyphenylmethylene derivs. 66086-38-2P 417702-61-5P
417702-63-7P 417702-65-9P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(cathode active material for lithium battery)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L145 ANSWER 14 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:256755 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 136:282001

TITLE: **Cathode active material composition
for lithium-sulfur
battery with good cycle life
characteristics**

INVENTOR(S): Hwang, Duck Chul; Choi, Yun Suk; Choi, Soo
Seok; Lee, Jea Woan; Jung, Yong Ju; Kim, Joo
Soak; Park, Zin

PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002039680	A1	20020404	US 2001-931079	2001 0817
US 6919143	B2	20050719		
KR 2002014195	A	20020225	KR 2000-47347	2000 0817
KR 2002048447	A	20020624	KR 2000-76694	2000 1214
JP 2002110237	A2	20020412	JP 2001-247174	2001 0816
CN 1339837	A	20020313	CN 2001-135732	2001 0817
PRIORITY APPLN. INFO.:			KR 2000-47347	A 2000 0817
			KR 2000-76694	A 2000 1214

AB A pos. active material composition for alithium-sulfur battery includes a pos. active material, a conductive agent, an organic mixing solvent to which solubility of sulfur is equal to or less than 50 mM, and a binder capable of dissolving in the organic mixing solvent.

IT 9003-39-8, Polyvinyl pyrrolidone
 RL: DEV (Device component use); MOA (Modifier or additive use);
 USES (Uses)
 (binder; cathode active material composition for lithium-sulfur battery with good cycle life characteristics)

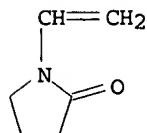
RN 9003-39-8 HCAPLUS

CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 88-12-0

CMF C6 H9 N O

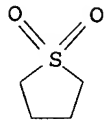


IT 126-33-0, Sulfolane 7704-34-9D, Sulfur
 , organic compound 10544-50-0, Sulfur s8, uses
 33454-82-9, Lithium triflate
 RL: DEV (Device component use); USES (Uses)
 (cathode active material composition for lithium-sulfur battery with good cycle life)

characteristics)

RN 126-33-0 HCAPLUS

CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



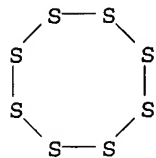
RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

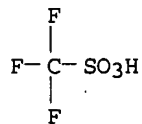
RN 10544-50-0 HCAPLUS

CN Sulfur, mol. (S8) (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 25322-68-3, Peo

RL: DEV (Device component use); MOA (Modifier or additive use);

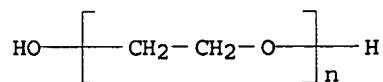
USES (Uses)

(cathode active material composition for lithium

-sulfur battery with good cycle life

characteristics)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)

IC ICM H01M004-58

ICS H01M010-40

INCL 429218100

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **lithium sulfur battery cathode**

IT Fluoropolymers, uses
 RL: DEV (Device component use); MOA (Modifier or additive use);
 USES (Uses)
 (binder; **cathode** active material composition for **lithium-sulfur battery** with good cycle life characteristics)

IT **Battery cathodes**
 (cathode active material composition for **lithium-sulfur battery** with good cycle life characteristics)

IT Carbon black, uses
 Polyanilines
 Polyoxalkylenes, uses
 RL: DEV (Device component use); MOA (Modifier or additive use);
 USES (Uses)
 (cathode active material composition for **lithium-sulfur battery** with good cycle life characteristics)

IT Secondary batteries
 (lithium; **cathode** active material composition for **lithium-sulfur battery** with good cycle life characteristics)

IT 9003-20-7, Polyvinyl acetate 9003-39-8, Polyvinyl pyrrolidone 24937-79-9, Polyvinylidene fluoride
 RL: DEV (Device component use); MOA (Modifier or additive use);
 USES (Uses)
 (binder; **cathode** active material composition for **lithium-sulfur battery** with good cycle life characteristics)

IT 64-17-5, Ethanol, uses 71-43-2, Benzene, uses 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3, Ethyl propionate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses 109-60-4, Propyl acetate 110-71-4 110-82-7, Cyclohexane, uses 111-96-6, Diglyme 126-33-0, Sulfolane 141-78-6, Ethyl acetate, uses 143-24-8, Tetraglyme 462-06-6, Fluorobenzene 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate 1330-20-7, Xylene, uses 7704-34-9D, Sulfur, organic compound 7791-03-9, Lithium perchlorate 10544-50-0, Sulfur s8, uses 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 27359-10-0, Trifluorotoluene 33454-82-9, Lithium triflate 56525-42-9, Methyl propyl carbonate 74432-42-1, Lithium polysulfide 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (cathode active material composition for **lithium-sulfur battery** with good cycle life characteristics)

IT 7782-42-5, Graphite, uses 25233-30-1, Polyaniline 25233-34-5, Polythiophene 25322-68-3, Peo 25322-69-4, Polypropylene oxide 30604-81-0, Polypyrrole
 RL: DEV (Device component use); MOA (Modifier or additive use);
 USES (Uses)
 (cathode active material composition for **lithium-sulfur battery** with good cycle life characteristics)

IT 67-63-0, Isopropyl alcohol, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 646-06-0, 1,3-Dioxolane
 RL: TEM (Technical or engineered material use); USES (Uses)
 (cathode active material composition for **lithium-sulfur battery** with good cycle life characteristics)

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

=> d que stat 1148

L3 556 SEA FILE=HCAPLUS ABB=ON PLU=ON ((LITHIUM OR LI) (A) (SU
LFUR OR SULPHUR OR S)) (3A) BATTER?

L4 41103 SEA FILE=HCAPLUS ABB=ON PLU=ON BUTADIENE (2A) (COPOLYM?
OR CO (W) POLYM?)

L5 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L3 AND L4

L7 10076 SEA FILE=REGISTRY ABB=ON PLU=ON 106-99-0/CRN

L8 18723 SEA FILE=REGISTRY ABB=ON PLU=ON 107-13-1/CRN

L9 72307 SEA FILE=REGISTRY ABB=ON PLU=ON 100-42-5/CRN

L10 1650 SEA FILE=REGISTRY ABB=ON PLU=ON L7 AND L8 AND L9

L11 2922 SEA FILE=REGISTRY ABB=ON PLU=ON L7 AND L8

L12 5168 SEA FILE=REGISTRY ABB=ON PLU=ON L7 AND L9

L13 1 SEA FILE=REGISTRY ABB=ON PLU=ON 7704-34-9/RN

L14 236 SEA FILE=REGISTRY ABB=ON PLU=ON S/ELS (L) 1/ELC.SUB

L15 14 SEA FILE=REGISTRY ABB=ON PLU=ON L14 AND S8

L16 161564 SEA FILE=HCAPLUS ABB=ON PLU=ON L14

L17 923 SEA FILE=HCAPLUS ABB=ON PLU=ON L15

L18 1 SEA FILE=REGISTRY ABB=ON PLU=ON 7439-93-2/RN

L19 80389 SEA FILE=HCAPLUS ABB=ON PLU=ON L18

L20 135539 SEA FILE=HCAPLUS ABB=ON PLU=ON L13

L21 556 SEA FILE=HCAPLUS ABB=ON PLU=ON ((L19 OR LITHIUM OR
LI) (A) (L20 OR L16 OR L17 OR SULFUR OR SULPHUR OR
S)) (3A) BATTER?

L23 270 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 AND (CATHOD? OR
POSITIV? (A) ELECTROD?)

L24 3464 SEA FILE=HCAPLUS ABB=ON PLU=ON CONDUCT? (2A) AGENT?

L25 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND L24

L26 160095 SEA FILE=HCAPLUS ABB=ON PLU=ON (ORGANIC? OR NONPOLAR?
OR NON (W) POLAR?) (2A) SOLVENT?

L27 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L26 AND L25

L28 2596 SEA FILE=HCAPLUS ABB=ON PLU=ON (CATHOD? OR POSITIV? (A)
ELECTROD?) (3A) (L20 OR L16 OR L17 OR SULFUR OR SULPHUR
OR S)

L29 10 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND L24

L30 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND L26

L31 138401 SEA FILE=HCAPLUS ABB=ON PLU=ON L7

L32 142919 SEA FILE=HCAPLUS ABB=ON PLU=ON L4 OR L31

L33 16 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L21

L34 13 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L23

L35 19 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L28

L36 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L35 AND (L24 OR L26)

L37 25985 SEA FILE=HCAPLUS ABB=ON PLU=ON L10

L38 27678 SEA FILE=HCAPLUS ABB=ON PLU=ON L37 OR (ACRYLONITRILE(
3A) BUTADIENE (3A) STYRENE)

L39 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 AND L38

L40 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND L38

L41 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND L38

L42 6 SEA FILE=HCAPLUS ABB=ON PLU=ON (L39 OR L40 OR L41)

L43 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L42 AND L24

L44 50636 SEA FILE=HCAPLUS ABB=ON PLU=ON L11

L45 52964 SEA FILE=HCAPLUS ABB=ON PLU=ON L44 OR (ACRYLONITRILE(
A) BUTADIENE)

L46 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND L21

L47 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND L23

L48 8 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND L28

L49 87240 SEA FILE=HCAPLUS ABB=ON PLU=ON L12

L50 93938 SEA FILE=HCAPLUS ABB=ON PLU=ON L49 OR (STYRENE (A) BUTA
DIENE)

L51 15 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 AND L21

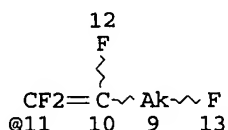
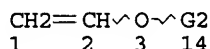
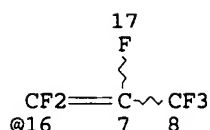
L52 12 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 AND L23

L53 15 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 AND L28

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L54      23 SEA FILE=HCAPLUS ABB=ON  PLU=ON  (L33 OR L34 OR L35 OR
L55      10568 SEA FILE=REGISTRY ABB=ON  PLU=ON  FLUOROPOLYMER?/PCT
L56      81458 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L55
L57      14 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L56 AND L54
L58      2999 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L3 OR L21 OR L23 OR
L59      119622 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L4 OR L38 OR L45 OR
L60      20 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L58 AND L59
L61      114716 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L56 OR FLUOROPOLYM?
L62      14 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L60 AND L61
L63      2 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L62 AND (L24 OR L26)
L65      1960 SEA FILE=REGISTRY ABB=ON  PLU=ON  116-15-4/CRN
L66      2316 SEA FILE=REGISTRY ABB=ON  PLU=ON  75-38-7/CRN
L67      647 SEA FILE=REGISTRY ABB=ON  PLU=ON  L65 AND L66
L68      5480 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L67
L71      6405 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L65 AND L66
L72      6405 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L68 OR L71
L73      9 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L60 AND L72
L74      2 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L73 AND (L24 OR L26)
L75      32 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L5 OR L25 OR L27 OR
L76      374637 SEA FILE=HCAPLUS ABB=ON  PLU=ON  VISCOS?
L77      3 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L75 AND L76
L78      5968 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L76 (5A) CONTROL?
L79      2 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L75 AND L78
L80      32 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L75 OR L77 OR L79
L81      QUE ABB=ON  PLU=ON  MICRON? OR MICROMET? OR (MU OR MIC
L82      3 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L80 AND L81
L83      1 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L80 AND EMULS?
L84      4 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L82 OR L83
L85      32 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L80 OR (L82 OR L83 OR
L86      79 SEA FILE=REGISTRY ABB=ON  PLU=ON  660-78-6/CRN
L88      3266 SEA FILE=REGISTRY ABB=ON  PLU=ON  79-38-9/CRN
L89      258 SEA FILE=REGISTRY ABB=ON  PLU=ON  75-02-5/CRN
L90      4756 SEA FILE=REGISTRY ABB=ON  PLU=ON  116-14-3/CRN
L91      13743 SEA FILE=REGISTRY ABB=ON  PLU=ON  74-85-1/CRN
L95      STR

```



Ak @15

VAR G2=15/16/11

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X20 C AT 9

ECOUNT IS M1-X20 C AT 15

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 14

STEREO ATTRIBUTES: NONE

L97 SCR 2043

L99 30315 SEA FILE=REGISTRY SSS FUL L95 AND L97

L100 4563 SEA FILE=REGISTRY ABB=ON PLU=ON (L90 OR L88 OR L66
OR L89 OR L86) AND (L91 OR L99)

L101 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9002-89-5/RN
 L103 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9003-39-8/RN
 L104 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9003-01-4/RN
 L105 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9003-05-8/RN
 L106 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-32-4/RN
 L107 1 SEA FILE=REGISTRY ABB=ON PLU=ON 25322-68-3/RN
 L108 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-62-0/RN
 L109 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-65-3/RN
 L110 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9004-34-6/RN
 L112 1 SEA FILE=REGISTRY ABB=ON PLU=ON 26913-06-4/RN
 L113 1 SEA FILE=REGISTRY ABB=ON PLU=ON 9002-98-6/RN
 L115 1 SEA FILE=REGISTRY ABB=ON PLU=ON 126-33-0/RN
 L116 1 SEA FILE=REGISTRY ABB=ON PLU=ON 33454-82-9/RN
 L117 5987 SEA FILE=HCAPLUS ABB=ON PLU=ON L100
 L118 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L60 AND L117
 L119 62070 SEA FILE=HCAPLUS ABB=ON PLU=ON L101
 L120 188 SEA FILE=HCAPLUS ABB=ON PLU=ON L02
 L121 27930 SEA FILE=HCAPLUS ABB=ON PLU=ON L103
 L122 19005 SEA FILE=HCAPLUS ABB=ON PLU=ON L104
 L123 24027 SEA FILE=HCAPLUS ABB=ON PLU=ON L105
 L124 24772 SEA FILE=HCAPLUS ABB=ON PLU=ON L106
 L125 88353 SEA FILE=HCAPLUS ABB=ON PLU=ON L107
 L126 9884 SEA FILE=HCAPLUS ABB=ON PLU=ON L108
 L127 11276 SEA FILE=HCAPLUS ABB=ON PLU=ON L109
 L128 10240 SEA FILE=HCAPLUS ABB=ON PLU=ON L110/D OR L110/DP
 L129 1417 SEA FILE=HCAPLUS ABB=ON PLU=ON L112
 L130 10249 SEA FILE=HCAPLUS ABB=ON PLU=ON L113
 L131 233164 SEA FILE=HCAPLUS ABB=ON PLU=ON (L119 OR L120 OR L121
 OR L122 OR L123 OR L124 OR L125 OR L126 OR L127 OR
 L128 OR L129 OR L130)
 L132 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L85 OR L118
 L133 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L132 AND L131
 L134 3992 SEA FILE=HCAPLUS ABB=ON PLU=ON L115
 L135 2636 SEA FILE=HCAPLUS ABB=ON PLU=ON L116
 L137 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L132 OR L133 OR L***
 L138 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L137 AND (L131 OR
 VISCOS?)
 L139 18 SEA FILE=HCAPLUS ABB=ON PLU=ON L137 NOT L138
 L140 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L139 AND (EMULS? OR
 L26 OR L81)
 L141 15 SEA FILE=HCAPLUS ABB=ON PLU=ON L139 NOT L140
 L142 765 SEA FILE=HCAPLUS ABB=ON PLU=ON ((LITHIUM OR LI OR
 SECONDAR? OR 2ND) (A) (SULFUR OR SULPHUR OR S)) (3A)BATTER
 ?
 L143 19 SEA FILE=HCAPLUS ABB=ON PLU=ON L137 AND L142
 L144 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L143 OR L137
 L148 15 SEA FILE=HCAPLUS ABB=ON PLU=ON L144 AND L141

=> d l148 1-15 ibib abs hitstr hitind

L148 ANSWER 1 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:1116597 HCAPLUS <<LOGINID::20060323>>
 DOCUMENT NUMBER: 143:463073
 TITLE: Secondary lithium battery with crosslinked
 polyvinyl chloride as the cathode material and
 its preparation
 INVENTOR(S): Tang, Zhiyuan; Xu, Guoxiang; Yu, Bitao; Yang,
 Dongping
 PATENT ASSIGNEE(S): Tianjin University, Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 7
 PP.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
CN 1564369	A	20050112	CN 2004-10018801	2004 0329

PRIORITY APPLN. INFO.: CN 2004-10018801
2004
0329

AB The cathode material is prepared from (by weight) crosslinked polyvinyl chloride 60-70%, bonding agent 10-15%, and **conductive agent** 15-30%. The polymer is prepared by mixing anhydrous sodium sulfide and sublimed sulfur, dissolving in DMF, stirring to get sodium polysulfide solution, dissolving polyvinyl chloride in DMF, dripping sodium polysulfide solution into the polyvinyl chloride solution, stirring to get vulcanized crosslinked polyvinyl chloride, and drying to get the powder product. In the **cathode material**, multi-sulfur bond structure is grafted onto the skeleton of chain polymer to obtain fixed S-S structure. The synthetic process of the poly-sulfur compound has the advantages of no pollution and low cost, and the battery using the same has the advantages of high energy d. and good charge-discharge cycle performance.

IC ICM H01M010-40

ICS H01M004-60; H01M004-62; H01M004-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 35

L148 ANSWER 2 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:1003783 HCAPLUS <<LOGINID::20060323>>
DOCUMENT NUMBER: 143:269683
TITLE: Secondary nonaqueous electrolyte battery
INVENTOR(S): Koga, Hideyuki; Itaya, Shoji; Dojo, Kazunori;
Miyake, Masahide; Fujimoto, Masahisa
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2005251516	A2	20050915	JP 2004-58933	2004 0303

PRIORITY APPLN. INFO.: JP 2004-58933
2004
0303

AB The battery has a **cathode** containing S as active mass and a SBR binder, an anode containing a Li-intercalating material; and a metal halide added nonaq. electrolyte.

IT 9002-84-0, PTFE

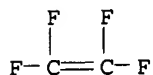
RL: DEV (Device component use); USES (Uses)
(electrolytes containing metal halide additives and cathodes containing SBR binders for secondary batteries)

RN 9002-84-0 HCAPLUS

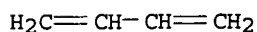
CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

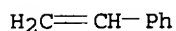
CRN 116-14-3
CMF C2 F4



IT 9003-55-8
RL: DEV (Device component use); USES (Uses)
(**styrene-butadiene** rubber; electrolytes
containing metal halide additives and cathodes containing SBR binders
for secondary batteries)
RN 9003-55-8 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
NAME)
CM 1
CRN 106-99-0
CMF C4 H6



CM 2
CRN 100-42-5
CMF C8 H8



IC ICM H01M010-40
ICS H01M004-02; H01M004-38; H01M004-58; H01M004-62
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary battery **sulfur cathode** SBR binder;
battery electrolyte additive metal halide
IT **Fluoropolymers**, uses
Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(electrolytes containing metal halide additives and cathodes containing
SBR binders for secondary batteries)
IT 110-71-4 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium, uses
7704-34-9, Sulfur, uses **9002-84-0**, PTFE 90076-65-6
RL: DEV (Device component use); USES (Uses)
(electrolytes containing metal halide additives and cathodes containing
SBR binders for secondary batteries)
IT 9003-55-8
RL: DEV (Device component use); USES (Uses)
(**styrene-butadiene** rubber; electrolytes
containing metal halide additives and cathodes containing SBR binders
for secondary batteries)

L148 ANSWER 3 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:976041 HCAPLUS <<LOGINID::20060323>>
DOCUMENT NUMBER: 143:269627
TITLE: Secondary **lithium/sulfur**
batteries providing high discharge
capacity
INVENTOR(S): Koga, Hideyuki; Itaya, Shoji; Dojo, Kazunori;

PATENT ASSIGNEE(S): Miyake, Masahide; Fujimoto, Masahisa
 SOURCE: Sanyo Electric Co., Ltd., Japan
 Jpn. Kokai Tokkyo Koho, 12 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005243518	A2	20050908	JP 2004-53879	2004 0227

PRIORITY APPLN. INFO.: JP 2004-53879
 2004
 0227

AB The batteries comprise **cathodes** containing **sulfur**
 (s), elec. conductors, and binders containing
styrene-butadiene rubbers, wherein
 polytetrafluoroethylene is included in the binders, too. The
 batteries show high discharge capacity d. even if the
 electrode-filling d. is high.

IT 9002-84-0, Polytetrafluoroethylene
 RL: DEV (Device component use); MOA (Modifier or additive use);
 USES (Uses)
 (binder additive; secondary Li/
battery containing **styrene-butadiene**
 rubber and polytetrafluoroethylene as **cathode**
 binders)

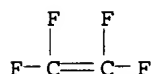
RN 9002-84-0 HCAPLUS

CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3

CMF C2 F4



IT 7704-34-9, **Sulfur**, uses
 RL: DEV (Device component use); USES (Uses)
 (cathode active mass; secondary Li/
S battery containing **styrene-**
butadiene rubber and polytetrafluoroethylene as
cathode binders)

RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-55-8
 RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, binder;
 secondary Li/S **battery** containing
styrene-butadiene rubber and
 polytetrafluoroethylene as **cathode** binders)

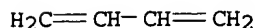
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

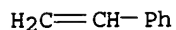
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-62

ICS H01M004-38; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium sulfur battery

cathode binder styrene butadiene

rubber; polytetrafluoroethylene binderlithium

sulfur battery

IT Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)

(binder; secondary Li/S battery

containing styrene-butadiene rubber and

polytetrafluoroethylene as cathode binders)

IT Battery cathodes

Secondary batteries

(secondary Li/S battery containing

styrene-butadiene rubber and

polytetrafluoroethylene as cathode binders)

IT Fluoropolymers, uses

RL: DEV (Device component use); MOA (Modifier or additive use);

USES (Uses)

(secondary Li/S battery containing

styrene-butadiene rubber and

polytetrafluoroethylene as cathode binders)

IT 9002-84-0, Polytetrafluoroethylene

RL: DEV (Device component use); MOA (Modifier or additive use);

USES (Uses)

(binder additive; secondary Li/S

battery containing styrene-butadiene

rubber and polytetrafluoroethylene as cathode

binders)

IT 7704-34-9, Sulfur, uses

RL: DEV (Device component use); USES (Uses)

(cathode active mass; secondary Li/

S battery containing styrene-

butadiene rubber and polytetrafluoroethylene as

cathode binders)

IT 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)

(cathode elec. conductor; secondary Li/

S battery containing styrene-

butadiene rubber and polytetrafluoroethylene as

cathode binders)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)

(styrene-butadiene rubber, binder;
secondary Li/S battery containing
styrene-butadiene rubber and
polytetrafluoroethylene ascathode binders)

L148 ANSWER 4 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:361886 HCAPLUS <<LOGINID::20060323>>
DOCUMENT NUMBER: 142:414509
TITLE: Organic electrolytic solution for lithium
battery
INVENTOR(S): Kim, Ju-Yup; Kim, Han-Soo; Park, Jin-Hwan;
Lee, Seok-Soo
PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1526600	A1	20050427	EP 2004-256478	2004 1020
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
US 2005106471	A1	20050519	US 2004-968903	2004 1021
CN 1610179	A	20050427	CN 2004-10095920	2004 1022
JP 2005129540	A2	20050519	JP 2004-309983	2004 1025
PRIORITY APPLN. INFO.:			KR 2003-74661	A 2003 1024

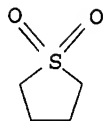
OTHER SOURCE(S): MARPAT 142:414509

AB The present invention is related to an organic electrolytic solution comprising a halogenated benzene compound, such as 1-iodobenzene or 1-chlorobenzene. Specifically, the halogenated benzene compound has a high polarity and is capable of reducing the reactivity of the lithium metal surface. Due to these characteristics of the halogenated benzene compound, the lithium ions are unlikely to bond with the sulfide anions. Therefore, the solubility of the sulfide within the electrolyte is increased, thereby improving the charge/discharge efficiency characteristics of the lithium ions and the lifespan of batteries. Moreover, the organic electrolytic solution of the present invention may be used in any battery type where an anode is composed of lithium metal, and in particular, lithium sulfur batteries.

IT 126-33-0, Sulfolane 24937-79-9, PvdF
RL: DEV (Device component use); USES (Uses)
(organic electrolytic solution for lithium battery)

RN 126-33-0 HCAPLUS

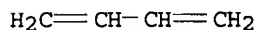
CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 24937-79-9 HCAPLUS
 CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)
 CM 1
 CRN 75-38-7
 CMF C2 H2 F2



IT 9003-55-8
 RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber; organic
 electrolytic solution for lithium battery)
 RN 9003-55-8 HCAPLUS
 CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
 NAME)
 CM 1
 CRN 106-99-0
 CMF C4 H6



CM 2
 CRN 100-42-5
 CMF C8 H8



IC ICM H01M010-40
 ICS H01M006-16
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT Carbonaceous materials (technological products)
 Fluoropolymers, uses
 RL: DEV (Device component use); USES (Uses)
 (organic electrolytic solution for lithium battery)
 IT Styrene-butadiene rubber, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (organic electrolytic solution for lithium battery)
 IT 71-43-2D, Benzene, halogenated 108-90-7, Chlorobenzene, uses
 110-71-4 111-96-6, Diethylene glycol dimethyl ether 112-36-7,
 Diethylene glycol diethyl ether 112-49-2, Triethylene glycol
 dimethyl ether 126-33-0, Sulfolane 463-79-6D, Carbonic
 acid, ester 591-50-4, Iodobenzene 608-29-7,
 1,2,3-Triiodobenzene 615-41-8, 1-Iodo-2-chlorobenzene
 615-42-9, 1,2-Diiodobenzene 615-68-9, 1,2,4-Triiodobenzene

624-38-4, 1,4-Diiodobenzene 625-99-0, 1-Iodo-3-chlorobenzene
626-00-6, 1,3-Diiodobenzene 646-06-0, Dioxolane 1072-47-5
1072-57-7 4499-99-4, Triethylene glycol diethyl ether
7439-93-2, Lithium, uses 7439-93-2D, Lithium, salt 7704-34-9,
Sulfur, uses 7782-42-5, Graphite, uses 9002-88-4, Polyethylene
24937-79-9, PvdF 29921-38-8 73506-93-1, Diethoxyethane
90076-65-6 676610-04-1

RL: DEV (Device component use); USES (Uses)
(organic electrolytic solution for lithium battery)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; organic
electrolytic solution for lithium battery)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L148 ANSWER 5 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:253918 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 142:319831

TITLE: Polymer film containingcathode and
lithium/sulfur

INVENTOR(S): battery using the cathode

PATENT ASSIGNEE(S): Kim, Chu-Hwa; Liu, Young-Kyun; Cho, Ming-Dong

SOURCE: Samsung SDI Co., Ltd., S. Korea

Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005079096	A2	20050324	JP 2004-247052	2004 0826
US 2005175903	A1	20050811	US 2004-924912	2004 0825
CN 1591934	A	20050309	CN 2004-10085179	2004 0827

PRIORITY APPLN. INFO.: KR 2003-60197 A
2003
0829

AB The cathode has an active mass layer containing S and/or
metal (poly)sulfide on a conductive support, and a polymer containing
a nonaq. electrolyte solution forming a film on the active mass layer
and filled in the pores in the active mass layer.

IT 7704-34-9, Sulfur, uses

RL: DEV (Device component use); USES (Uses)
(cathodes having nonaq. electrolyte solution containing
polymer on surface and in pores of active mass layer for
sodium/sulfur batteries)

RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)

(**styrene-butadiene rubber; cathodes**
 having nonaq. electrolyte solution containing polymer on surface and
 in pores of active mass layer for sodium/sulfur batteries)
 RN 9003-55-8 HCAPLUS
 CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
 NAME)

CM 1

CRN 106-99-0
 CMF C4 H6

$\text{H}_2\text{C}=\text{CH}-\text{CH}=\text{CH}_2$

CM 2

CRN 100-42-5
 CMF C8 H8

$\text{H}_2\text{C}=\text{CH}-\text{Ph}$

IC ICM H01M004-02
 ICS H01M004-38; H01M004-58; H01M004-62; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST **lithium sulfur battery**
cathode polymer electrolyte layer filling
 IT Battery **cathodes**
 (cathodes having nonaq. electrolyte solution containing
 polymer on surface and in pores of active mass layer for
 sodium/sulfur batteries)
 IT Carbon black, uses
Styrene-butadiene rubber, uses
 RL: DEV (Device component use); USES (Uses)
 (cathodes having nonaq. electrolyte solution containing
 polymer on surface and in pores of active mass layer for
 sodium/sulfur batteries)
 IT 109-87-5, Dimethoxymethane 111-96-6, Diglyme 646-06-0,
 Dioxolane 7429-90-5, Aluminum, uses **7704-34-9**,
Sulfur, uses 15625-89-5, Tmpta 17831-71-9D,
 Tetra(ethylene glycol)diacrylate, polymer 25721-76-0D,
 Poly(ethylene glycol)dimethacrylate, polymer 25852-47-5D,
 Poly(ethylene glycol)dimethacrylate, polymer 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (cathodes having nonaq. electrolyte solution containing
 polymer on surface and in pores of active mass layer for
 sodium/sulfur batteries)
 IT **9003-55-8**
 RL: DEV (Device component use); USES (Uses)
 (**styrene-butadiene rubber; cathodes**
 having nonaq. electrolyte solution containing polymer on surface and
 in pores of active mass layer for sodium/sulfur batteries)

L148 ANSWER 6 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:1038566 HCAPLUS <<LOGINID::20060323>>
 DOCUMENT NUMBER: 142:25893
 TITLE: Secondary battery
 INVENTOR(S): Koga, Hideyuki; Itaya, Shoji; Dojo, Kazunori;
 Miyake, Masahide; Fujimoto, Masahisa
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.
 CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004342575	A2	20041202	JP 2003-337866	2003 0929
PRIORITY APPLN. INFO.:			JP 2003-122458	A 2003 0425

AB The battery has an anode, a cathode, containing ≥ 20 mass% S as an active mass, and a nonaq. electrolyte, containing a room-temperature molten salt with m.p. $\leq 60^\circ$.

IT 9002-84-0, Polytetrafluoroethylene
RL: DEV (Device component use); USES (Uses)
(secondary batteries containing sulfur in cathodes and room-temperature molten salts in electrolytes)

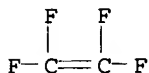
RN 9002-84-0 HCAPLUS

CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3

CMF C2 F4



IT 9003-55-8
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; secondary
batteries containing sulfur in cathodes and
room-temperature molten salts in electrolytes)

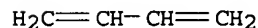
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

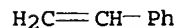
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-58
ICS H01M004-02; H01M004-38; H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary battery **cathode sulfur** electrolyte
 room temp molten salt
 IT Secondary batteries
 (secondary batteries containing **sulfur** in
cathodes and room-temperature molten salts in electrolytes)
 IT **Fluoropolymers**, uses
Styrene-butadiene rubber, uses
 RL: DEV (Device component use); USES (Uses)
 (secondary batteries containing **sulfur** in
cathodes and room-temperature molten salts in electrolytes)
 IT 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane
 7439-93-2, Lithium, uses 7704-34-9, Sulfur, uses
 9002-84-0, Polytetrafluoroethylene 90076-65-6
 268536-05-6, Trimethyl propyl ammonium
 bis(trifluoromethylsulfonyl) imide
 RL: DEV (Device component use); USES (Uses)
 (secondary batteries containing **sulfur** in
cathodes and room-temperature molten salts in electrolytes)
 IT 9003-55-8
 RL: DEV (Device component use); USES (Uses)
 (**styrene-butadiene** rubber; secondary
 batteries containing **sulfur** in **cathodes** and
 room-temperature molten salts in electrolytes)

L148 ANSWER 7 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:932884 HCAPLUS <<LOGINID::20060323>>
 DOCUMENT NUMBER: 142:138259
 TITLE: Montmorillonite **sulfur** composite
cathode material for lithium secondary
 batteries
 INVENTOR(S): Jun, Byeong Ho; Jung, In Je; Jung, Won Cheol;
 Seung, Do Yeong
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp.
 given
 CODEN: KRXXA7
 DOCUMENT TYPE: Patent
 LANGUAGE: Korean
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
KR 2002020312	A	20020315	KR 2000-53412	2000 0908

PRIORITY APPLN. INFO.: KR 2000-53412
 2000
 0908

AB This composite cathode material can be easily processed and has good capacity properties. The composite comprises 100 pts. by weight of montmorillonite as a support and 100-900 pts. by weight of the S intercalated in the montmorillonite and addnl., 5-60 pts. by weight of a conductive polymer selected from polyaniline, poly-thiophene, poly-pyrrole, and derivs. thereof. The montmorillonite/S composite is produced by mixing Na-montmorillonite and S with the conductive polymer and then heat-treating the mixture at 130-300°, with Na being substituted by S. The cathode of the battery contains the montmorillonite/S composite, a **conductive agent**, and a binder.

IC ICM H01M004-02
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST montmorillonite **sulfur** composite **cathode**

lithium battery
 IT Polyanilines
 RL: DEV (Device component use); USES (Uses)
 (in montmorillonite,sulfur composite cathode
 material for lithium secondary batteries)
 IT Secondary batteries
 (lithium; montmorillonite,sulfur composite
 cathode material for lithium secondary batteries)
 IT Battery cathodes
 Composites
 (montmorillonite,sulfur composite cathode
 material for lithium secondary batteries)
 IT 25233-34-5, Poly-thiophene 30604-81-0, Poly-pyrrole
 RL: DEV (Device component use); USES (Uses)
 (in montmorillonite,sulfur composite cathode
 material for lithium secondary batteries)
 IT 1318-93-0, Montmorillonite, uses 7704-34-9, Sulfur, uses
 RL: DEV (Device component use); USES (Uses)
 (montmorillonite,sulfur composite cathode
 material for lithium secondary batteries)

L148 ANSWER 8 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:920666 HCAPLUS <<LOGINID::20060323>>
 DOCUMENT NUMBER: 142:180334
 TITLE: Preparation of sulfur-based
 cathodes for batteries
 INVENTOR(S): Cho, Ji Hun; Jang, Deok Rye; Jun, Sang Eun;
 Kim, Hui Tak; Kim, Seon Uk; Ko, Gi Seok; Kwon,
 Chang Wi
 PATENT ASSIGNEE(S): Newturn Energy Co., Ltd., S. Korea
 SOURCE: Repub. Korean Kongkae Taehe Kongbo, No pp.
 given
 CODEN: KRXXA7
 DOCUMENT TYPE: Patent
 LANGUAGE: Korean
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2002068783	A	20020828	KR 2001-9050	2001 0222

PRIORITY APPLN. INFO.: KR 2001-9050
 2001
 0222

AB This cathode has increased contact area between C and S, it
 maintains uniform contact with the carbon, thereby increasing the
 reaction velocity during discharging. The method entails
 dispersing C and a binder into a solvent to prepare a slurry;
 coating the slurry on a current collector and drying it to prepare a
 C matrix on the current collector; dipping the current collector
 into a solution containing S or a S melt to infiltrate S into the C
 matrix; and drying the S-infiltrated C matrix. The binder is
 selected from PVdF, PVdF-HFP copolymer,
 butadiene-styrene copolymer,
 acrylonitrile-butadiene-styrene
 copolymer, polytetrafluoroethylene, CMC, polyethylene and
 polypropylene. The current collector is selected from Al, etched
 Al, Ni, Cu and stainless steel. The solvent is selected from H₂O,
 N-methylpyrrolidone, MeCN, EtOH, MeOH and isoPr alc.
 IT 9002-84-0, Polytetrafluoroethylene 9003-55-8,
 Butadiene-styrene copolymer
 9003-56-9, Acrylonitrile-butadiene-

styrene copolymer 9011-17-0

24937-79-9, PVdF

RL: DEV (Device component use); USES (Uses)
(sulfur-based cathodes for batteries with)

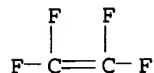
RN 9002-84-0 HCAPLUS

CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3

CMF C2 F4



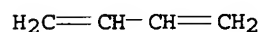
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

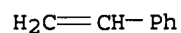
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



RN 9003-56-9 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

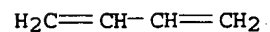
CMF C3 H3 N



CM 2

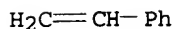
CRN 106-99-0

CMF C4 H6



CM 3

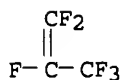
CRN 100-42-5
CMF C8 H8



RN 9011-17-0 HCAPLUS
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-96
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **sulfur carbon cathode** battery
IT **Battery cathodes**
Primary batteries
Secondary batteries
(preparation of **sulfur-based cathodes** for
batteries)
IT **Fluoropolymers**, uses
RL: DEV (Device component use); USES (Uses)
(**sulfur-based cathodes** for batteries with)
IT 7440-44-0, Carbon, uses 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(preparation of **sulfur-based cathodes** for
batteries)
IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 67-63-0,
2-Propanol, uses 75-05-8, Acetonitrile, uses 872-50-4,

N-Methylpyrrolidone, uses 7429-90-5, Aluminum, uses 7440-02-0,
 Nickel, uses 7440-50-8, Copper, uses 7732-18-5, Water, uses
 9002-84-0, Polytetrafluoroethylene 9002-88-4,
 Polyethylene 9003-07-0, Polypropylene 9003-55-8,
 Butadiene-styrene copolymer
 9003-56-9, Acrylonitrile-butadiene-
 styrene copolymer 9011-17-0
 12597-68-1, Stainless steel, uses 24937-79-9, PVdF
 RL: DEV (Device component use); USES (Uses)
 (sulfur-based cathodes for batteries with)

L148 ANSWER 9 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:803862 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 141:298765

TITLE: Method for manufacture of cathode for
 nonaqueous electrolyte secondary battery

INVENTOR(S): Itaya, Masaharu; Miyake, Masahide; Fujimoto,
 Masahisa

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: U.S. Pat. Appl. Publ., 67 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004191629	A1	20040930	US 2004-807148	2004 0324
JP 2004296189	A2	20041021	JP 2003-85138	2003 0326
JP 2005190978	A2	20050714	JP 2004-73577	2004 0315
CN 1534822	A	20041006	CN 2004-10032318	2004 0326
PRIORITY APPLN. INFO.:			JP 2003-85138	A 2003 0326
			JP 2003-89077	A 2003 0327
			JP 2003-405837	A 2003 1204
			JP 2004-73577	A 2004 0315

AB A non-aqueous electrolyte secondary battery comprises a pos.
 electrode including elemental sulfur, a neg.
 electrode including silicon that stores lithium, and a non-aqueous
 electrolyte including a room temperature molten salt having a m.p. of
 not higher than 60°. The non-aqueous electrolyte may further
 include at least one type of solvent selected from cyclic ether,
 chain ether, and fluorinated carbonate. The non-aqueous electrolyte
 may include a reduction product of elemental sulfur. The pos.
 electrode has a pos. electrode active material made of a mixture of

elemental sulfur, a **conductive agent**, and a binder. The electrode having a pos. electrode active material is processed under reduced-pressure while immersed in the non-aqueous electrolyte. A pressure during the reduced-pressure process is preferably not higher than 28000 Pa (-55 cm Hg with respect to atmospheric pressure).

IC ICM H01M004-58

ICS H01M010-40

INCL 429231950; 429218100; 429220000; 429329000; 429337000; 429330000;
429338000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

LI48 ANSWER 10 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:39668 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 140:79838

TITLE: **Cathode for lithium-sulfur battery**

INVENTOR(S): Kim, Seok; Jung, Yongju; Han, Ji-Seong; Kim, Jan-Dee

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd, S. Korea

SOURCE: U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

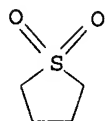
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004009396	A1	20040115	US 2003-429824	2003 0506
CN 1467865	A	20040114	CN 2003-131474	2003 0515
JP 2004055544	A2	20040219	JP 2003-156958	2003 0602
PRIORITY APPLN. INFO.:		KR 2002-40007	A	2002 0710

AB A pos. electrode for a lithium-sulfur battery includes a pos. active material, a binder, a **conductive agent**, and a surfactant. The surfactant is an oligomer or a polymer having a weight-average mol. weight of 500-10,000.

IT 126-33-0, Sulfolane 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, compound 33454-82-9, Lithium triflate
RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur battery)

RN 126-33-0 HCAPLUS

CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

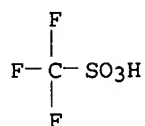
RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-62

ICS H01M004-58; H01M004-66

INCL 429212000; 429218100; 429217000; 429245000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **cathode lithium sulfur**

battery

IT Ethers, uses

RL: MOA (Modifier or additive use); USES (Uses)
(allyl aryl; **cathode for lithium-sulfur battery**)

IT Amides, uses

RL: MOA (Modifier or additive use); USES (Uses)
(amino; **cathode for lithium-sulfur battery**)

IT Surfactants

(anionic; **cathode for lithium-sulfur battery**)

IT **Battery cathodes**

Surfactants
(**cathode for lithium-sulfur battery**)

IT Amides, uses

Carbon black, uses

Carboxylic acids, uses

Esters, uses

Quaternary ammonium compounds, uses

Sulfonic acids, uses

Thioethers

RL: MOA (Modifier or additive use); USES (Uses)
(**cathode for lithium-sulfur battery**)

IT Surfactants

(cationic; **cathode for lithium-sulfur battery**)

IT Fluoropolymers, uses

RL: MOA (Modifier or additive use); USES (Uses)
(latex; **cathode for lithium-sulfur**)

- battery)
IT Secondary batteries
(lithium; cathode for lithium-sulfur battery)
IT Surfactants
(nonionic; cathode for lithium-sulfur battery)
IT Amines, uses
RL: MOA (Modifier or additive use); USES (Uses)
(salts; cathode for lithium-sulfur battery)
IT Oligomers
Polymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(surfactant; cathode for lithium-sulfur battery)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(C-coated; cathode for lithium-sulfur battery)
IT 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane
646-06-0, 1,3-Dioxolane 7704-34-9, Sulfur,
uses 7704-34-9D, Sulfur, compound
33454-82-9, Lithium triflate
RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur battery)
IT 107-13-1, Acrylonitrile, uses 1338-41-6, SPAN 60 7664-93-9D,
Sulfuric acid, ester 9002-92-0, BRIJ 30 9003-03-6, Polyacrylic
acid, ammonium salt 9005-70-3, Tween 85 24991-55-7,
Polyethylene glycol dimethyl ether
RL: MOA (Modifier or additive use); USES (Uses)
(cathode for lithium-sulfur battery)
IT 24937-79-9, Polyvinylidene fluoride
RL: MOA (Modifier or additive use); USES (Uses)
(latex; cathode for lithium-sulfur battery)

L148 ANSWER 11 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:547230 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 139:247972

TITLE: Rechargeable lithium sulfur
battery. I. Structural change of
sulfur cathode during
discharge and charge

AUTHOR(S): Cheon, Sang-Eun; Ko, Ki-Seok; Cho, Ji-Hoon;
Kim, Sun-Wook; Chin, Eog-Yong; Kim, Hee-Tak

CORPORATE SOURCE: New Turn Energy Company Limited, Suwon,
442-380, S. Korea

SOURCE: Journal of the Electrochemical Society (2003),
150(6), A796-A799

CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

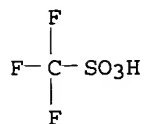
AB The structural change of the sulfur cathode
during the electrochem. reaction of alithium
sulfur battery employing 0.5M
LiCF₃SO₃-tetra(ethylene glycol) di-Me ether (TEGDME) was studied
by SEM, XRD, and wave dispersive spectroscopy (WDS). The
discharge process of the lithium sulfur cell could be divided into
the 1st discharge region (2.4-2.1 V) where the reduction of elemental
sulfur to form soluble polysulfides and further reduction of the soluble
polysulfide occur, and the 2nd discharge region (2.1-1.5 V) where
the soluble polysulfides are reduced to form a nonuniform Li₂S solid

film covered over the carbon matrix. Also the charge of lithium sulfur cell leads to the conversion from Li₂S to the soluble polysulfide, resulting in the removal of Li₂S layer formed on carbon matrix. However, the oxidation of the soluble polysulfide to solid sulfur hardly occurs and little Li₂S is left on carbon matrix even at 100% depth of charge.

IT 7704-34-9, Sulfur, uses
 RL: DEV (Device component use); USES (Uses)
 (composite cathode with super P and
 poly(butadiene-co-styrene); structural change of sulfur
 cathode during discharge and charge of rechargeable
 lithium sulfur battery)
 RN 7704-34-9 HCAPLUS
 CN Sulfur (8CI, 9CI) (CA INDEX NAME)

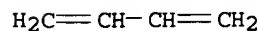
S

IT 33454-82-9
 RL: DEV (Device component use); USES (Uses)
 (electrolyte; structural change of sulfur
 cathode during discharge and charge of rechargeable
 lithium sulfur battery)
 RN 33454-82-9 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA
 INDEX NAME)



● Li

IT 9003-55-8
 RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, polymers, binder
 for composite cathode of sulfur and super
 P; structural change of sulfur cathode
 during discharge and charge of rechargeable lithium
 sulfur battery)
 RN 9003-55-8 HCAPLUS
 CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX
 NAME)
 CM 1
 CRN 106-99-0
 CMF C4 H6



CM 2
 CRN 100-42-5
 CMF C8 H8

H₂C=CH-Ph

- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76
- ST rechargeable **lithium sulfur battery**
cathode discharge charge soluble polysulfide; SEM XRD WDS
battery cathode structure change
- IT **Styrene-butadiene** rubber, uses
RL: DEV (Device component use); USES (Uses)
(polymers, binder for composite **cathode** of
sulfur and super P; structural change of **sulfur**
cathode during discharge and charge of rechargeable
lithium sulfur battery)
- IT Battery **cathodes**
Electric potential
Secondary batteries
(structural change of **sulfur cathode** during
discharge and charge of rechargeable **lithium**
sulfur battery)
- IT 7440-44-0, Super P, uses
RL: DEV (Device component use); USES (Uses)
(activated, composite **cathode** with **sulfur**
and poly(butadiene-co-styrene); structural change of
sulfur cathode during discharge and charge of
rechargeable **lithium sulfur battery**
)
- IT 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(composite **cathode** with super P and
poly(butadiene-co-styrene); structural change of **sulfur**
cathode during discharge and charge of rechargeable
lithium sulfur battery)
- IT 143-24-8, Tetra(ethylene glycol) di methyl ether
33454-82-9
RL: DEV (Device component use); USES (Uses)
(electrolyte; structural change of **sulfur**
cathode during discharge and charge of rechargeable
lithium sulfur battery)
- IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(foil, anode; structural change of **sulfur**
cathode during discharge and charge of rechargeable
lithium sulfur battery)
- IT 9003-07-0, Celgard 3501
RL: DEV (Device component use); USES (Uses)
(separator; structural change of **sulfur**
cathode during discharge and charge of rechargeable
lithium sulfur battery)
- IT 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(structural change of **sulfur cathode** during
discharge and charge of rechargeable **lithium**
sulfur battery)
- IT 9080-49-3, Sulfide ((Sx)2-)
RL: FMU (Formation, unclassified); FORM (Formation,
nonpreparative)
(structural change of **sulfur cathode** during
discharge and charge of rechargeable **lithium**
sulfur battery)
- IT 12136-58-2, Lithium sulfide (Li₂S)
RL: FMU (Formation, unclassified); PRP (Properties); RCT
(Reactant); FORM (Formation, nonpreparative); RACT (Reactant or
reagent)
(structural change of **sulfur cathode** during

discharge and charge of rechargeablelithium
sulfur battery)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, polymers, binder
for composite cathode of sulfur and super
P; structural change of sulfur cathode
during discharge and charge of rechargeablelithium
sulfur battery)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L148 ANSWER 12 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1988:513532 HCAPLUS <<LOGINID::20060323>>

DOCUMENT NUMBER: 109:113532

TITLE: Battery electrode materials

INVENTOR(S): Fujii, Masayuki; Toda, Hideo; Wakayama, Tatsuo

PATENT ASSIGNEE(S): Mitsubishi Petrochemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 63143746	A2	19880616	JP 1986-288934	1986

1205

PRIORITY APPLN. INFO.: JP 1986-288934

1986

1205

AB Battery electrode materials consist of S and I and contain
vulcanizable polymer. Thus, 0.1 g polymeric S obtained by pouring
molten S in water was pulverized and mixed with Kketjenblack 0.1,
liquid polybutadiene 0.1, and I 1 g, and the mixture was pressed at
160° to form a firm, 1 mm-thick sheet. A battery having
this sheet as cathode, a Li anode, and 1M LiClO₄-
butyrolactone electrolyte, showed initial voltage of 3.4 V. At
constant-current discharge at 8 mA, the voltage was 2 V after 12.9
h, and .apprx.0 V after further discharge for 5.2 h.

IT 9003-17-2

RL: USES (Uses)
(rubber, cathodes from iodine-sulfur-, for
nonaq.-electrolyte batteries)

RN 9003-17-2 HCAPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6

H₂C=CH-CH=CH₂

IC ICM H01M004-36

ICS H01M004-02; H01M004-60; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 39

ST battery cathode sulfur iodine; polymer

vulcanized iodine sulfur cathode
IT Rubber, butadiene, uses and miscellaneous
RL: USES (Uses)
(cathodes from iodine-sulfur-, for
nonaq.-electrolyte batteries)
IT Cathodes
(battery, sulfur-iodine-vulcanized polymer,
nonaq.-electrolyte)
IT 7704-34-9, Sulfur, uses and miscellaneous
RL: USES (Uses)
(cathodes from iodine-vulcanizable polymer-, for
nonaq.-electrolyte batteries)
IT 7553-56-2, Iodine, uses and miscellaneous
RL: USES (Uses)
(cathodes from sulfur-vulcanizable
polymer-, for nonaq.-electrolyte batteries)
IT 9003-17-2
RL: USES (Uses)
(rubber, cathodes from iodine-sulfur-, for
nonaq.-electrolyte batteries)

L148 ANSWER 13 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1984:519376 HCAPLUS <<LOGINID::20060323>>
DOCUMENT NUMBER: 101:119376
TITLE: Nonaqueous battery
PATENT ASSIGNEE(S): Toshiba Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 59098470	A2	19840606	JP 1982-189793	1982 1028

PRIORITY APPLN. INFO.: JP 1982-189793
1982
1028

AB In the nonaq. battery composed of cathode plate(s) and light metal anode plate(s), with separator(s) carrying organic electrolyte solution, extra layer(s) of electroconductive, porous material is placed between the cathode plates and electrolyte-carrying separator, and those layers are elec. connected to the cathodes. The battery provides increased effective cathode area under heavy loading. Thus, a battery was constructed from (1) cathode plate containing MnO₂, conductive agent and binder, (2) polypropylene nonwoven cloth as electrolyte-carrying separator, (3) nonwoven cloth as conductive layer, (4) Li anode, and (5) 1M LiClO₄ in propylene carbonate/1,2-dimethoxyethane 1:1 mixture Tests showed higher discharge voltage and higher efficiency, in comparison with the control without the claimed conductive layer.

IC H01M006-12; H01M004-64; H01M006-16
CC 72-3 (Electrochemistry)

L148 ANSWER 14 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1980:60509 HCAPLUS <<LOGINID::20060323>>
DOCUMENT NUMBER: 92:60509
TITLE: Electrocoating of an article
INVENTOR(S): Kubo, Akira; Todoroki, Nobuaki; Teshima, Yasuhiko; Kuranami, Nobuo; Tsutsui, Nobukazu;

PATENT ASSIGNEE(S): Kasai, Akio
 Shinto Paint Co., Ltd., Japan; Honda Motor
 Co., Ltd.
 SOURCE: Ger. Offen., 20 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2919130	A1	19791115	DE 1979-2919130	1979 0511
DE 2919130	B2	19801113		
DE 2919130	C3	19860417		
JP 54148037	A2	19791119	JP 1978-56009	1978 0511
JP 56020359	B4	19810513		
JP 54148038	A2	19791119	JP 1978-56010	1978 0511
US 4208262	A	19800617	US 1979-37853	1979 0510
PRIORITY APPLN. INFO.:			JP 1978-56009	A 1978 0511
			JP 1978-56010	A 1978 0511

AB The surface quality of coatings prepared by first electrodeposition of a polymer powder followed by electrodeposition of an ionic polymer is improved by spraying the coated surface with water at 80° between the two steps of the process. Thus, a phosphated, water-washed automobile body part was electrocoated 30 s as the cathode in an aqueous 15% solids bath containing 143 parts 488:105 Epikote 1001 (I)-diethanolamine(II) reaction product and 350 parts of a powdered mixture containing Epikote 1004 (III) [111-42-2] 40, Adduct B-1065 30, TiO₂ 29, and carbon black 1 part at pH 5.2 (HOAc). The coated part was washed with water, sprayed with 150 L water at 80°, allowed to age 5 min, electrocoated 210 s in an aqueous 25% solids cationic deposition bath containing the reaction product of III 336, I 143, and II 59 parts, HOAc, TiO₂, and carbon black, washed with water, dewatered at 80-100°, and hardened 20 min at 190° to give a 20-60-μ-thick coating with good surface quality, whereas some areas of a similar two-layer coating without the intermediate hot-water treatment had thickness > 80μ and exhibited peel-off and surface roughness. In another example the ionic polymer was an anionic resin based on polybutadiene.

IT 9003-17-2D, anionic derivs.

RL: USES (Uses)

(electrocoating with, on surfaces electrocoated with epoxy resins in powdered form, with improved quality)

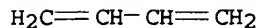
RN 9003-17-2 HCAPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



IC C25D013-06; B05D003-00
CC 42-7 (Coatings, Inks, and Related Products)
IT 9003-17-2D, anionic derivs.
RL: USES (Uses)
(electrocoating with, on surfaces electrocoated with epoxy
resins in powdered form, with improved quality)

L148 ANSWER 15 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1975:482597 HCAPLUS <<LOGINID::20060323>>
DOCUMENT NUMBER: 83:82597
TITLE: Electrical conductivity increasing
agent for positive
electrode mix of sodium-sulfur
fuel cells
INVENTOR(S): Hirai, Toshio
PATENT ASSIGNEE(S): Yuasa Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 50002126	A2	19750110	JP 1973-53398	1973 0514
PRIORITY APPLN. INFO.:			JP 1973-53398	A 1973 0514

AB Na-S fuel cells contain a C [7440-44-0]-base material whose degree of graphitization is $\geq 0.5\%$ as the elec. cond
.-increasing agent for the cathode mix. The elec.
conductor exhibits very small elec. contact resistance with the
active substances (i.e. Na₂S and S) and improves the power output
of the cells. Thus, C cloth whose degree of graphitization was
1.2% was used as the elec. conductivity-increasing
agent for the cathode mix in a 300 W/kg Na-S fuel cell.
The maximum discharge current d. of the cell was ≥ 600 vs.
 ≤ 200 mA/cm² for a control with a C-base cloth having 0.5%
graphitization degree.

INCL 57A0; 57C0

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

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